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CONDUCTED BY
THOMAS Y. SIMONS, M. D.
AND
WILLIAM MICHEL, M. D.

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DISTRICT OF SOUTH CAROLINA.

BE IT REMEMBERED, that on the twenty second day of January, Anno Domini, one thousand eight hundred and twenty five, and in the Forty ninth year of the Independence of the United States of America, Thomas Y. Simons M. D. and William Michel, M. D. deposited in the Office, the title of a Book, the right whereof they claim as authors and proprietors, in the words following to wit :

“The CAROLINA JOURNAL of Medicine, Science and Agriculture, conducted by Thomas Y. Simons M. D. and William Michel, M. D.—*Opinionum commenta delet dies, naturæ judicia confirmat.*—Cic. de Nat. Deor.”

In conformity with the act of Congress of the United States, entitled “An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies during the times therein mentioned,” and also An act entitled “An act supplementary to An act, entitled “An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned” and extending the benefits thereof to the arts of designing, engraving and etching, historical and other prints.

JAMES JERVEY.

District Clerk, S. C. D.

TO OUR READERS AND CORRESPONDENTS.

WE must beg the indulgence of our Subscribers for the unavoidable delay of our second number, and promise in future greater punctuality. At the same time we thank the public for the kind reception of the first number, and are happy to say its circulation is gradually extending.

We have received several Communications, and an Essay for the Medical Prize Question, having the motto—

*"The evil that men do, lives after them ;
The good is oft interr'd with their bones."*—SHAKESPEARE.

which shall be attended to. Least there should be some mistake, we beg leave to say, we shall be happy to receive Communications not only on Medicine and Agriculture, but likewise on Science, including Natural History and the Arts.

We some time since published in the Newspapers of this city, the following Advertisement :—

PRIZE QUESTIONS.

The Editors of the *Carolina Journal of Medicine, Science, and Agriculture*, sensible of the encouragement given to this effort to draw forth the researches and improvement of their Southern countrymen, and desirous of extending the usefulness of their work, respectfully offer TWO MEDALS, of the value of *Twenty Dollars each, or a set of Books of that value*, at the option of the successful candidates, for the best Essays on the following subjects :

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Each Essay must be accompanied with a sealed letter containing a motto corresponding with that of the Essay, and the name of the author ; to be sent to the Editors (post paid) on or before the 1st of November, 1825.

A Committee of three impartial and competent judges will be appointed on each of the questions. All the letters, except those of the successful candidates, will be burnt, and the Essays disposed of according to the wish of the authors. The Essays of the successful candidates will be published in the Journal.

Our next number will be published on the 15th of July—All Communications for that number must be sent early.

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ART. I.

ESSAY ON VARIOLA OR SMALL-POX.

BY WILLIAM MICHEL, M. D.

Salus populi suprema lex esto—*Her.*

History of the Disease.

It is not probable that the Greeks and Romans had any knowledge of the Small-pox. Some commentators however have thought that they discovered traces of this malady in the luminous writings of Hippocrates and Galen. It is true that the author of the sixth book of epidemics mentions a disease of the skin peculiar to children, and characterized by large red pustules, the repercussion of which occasioned convulsions, epileptic fits and death; but any reflective and candid mind will readily acknowledge, that this incomplete description does not allude more especially to the Small-pox, than any other cutaneous affection.

Authors such as Hippocrates, Aretæus, Celsus, Galen &c, who succeeded so admirably in the delineation of diseases, that their descriptions may rather be looked upon as finished paintings than histories; would not have failed to represent the one under our consideration, (if it had existed in their day,) so as to secure us from error.

Of all the Physicians of antiquity, Galen would have had the most frequent opportunities, of observing the Variola. He travelled through all the Roman Empire, and successively visited Asia Minor, Greece and Egypt. Multitudes every where attracted by his extraordinary skill, and the supposed magic of his cures, eagerly hastened to him for relief. If therefore the Small-pox had existed, he would have seen

and described it; but in all his writings there is not a single description which can be taken for this disease.

Historians also like the pure and energetic Thucydides, would have mentioned it as a pest (1) which had desolated some country or town, leaving the marks of its ferocity — From our knowledge of the polytheism of the ancients, it is nothing but rational to conjecture, that terrified at the direful consequences of the Small-pox, they would have erected temples or statues to it as to other evil divinities (2). If the pages of history, and the monuments of antiquity are dumb on the subject, we cannot but conclude that the Variola was unknown in those remote ages

Moreover, if we go back to the etymology of the word Variola which is of modern origin, it will furnish us with an almost incontrovertible evidence of its being a new disorder, for when a thing has a name which cannot be found in any ancient language, it is the strongest proof that can be adduced to demonstrate its novelty. Thus Pliny wishing to prove that the Gout was a new disease in Italy, gives no other reason, but that it had no name in the latin language.

According to Bruce (3), the siege of Mecca must be considered as the epoch of the first appearance of this dreadful malady which began in the year 569. The Abyssinian army fell a sacrifice to it during the war of the elephant. The Small-pox grew familiar among the Arabians, and accompanied them in all their conquests. It broke out in Egypt in 634, the time of its invasion by the Caliph Omar, the successor of Mahomet, from hence it overrun Syria, Mesopotamia and Persia, reached the oriental part of Asia; and by communication extended to China, Tartary, Kamtchatka, &c. &c.

In the seventh century it desolated Gaul and Italy, where it raged several times accompanied with Diarrhoea and Dysentery. In the eighth century the victorious Saracens carried it from the coast of Africa to Europe, (where it

(1.) The name of pest, was originally given to every fatal epidemic.

(2.) In the Kingdom of Golconda they worship an Idol, to which is attributed the power of producing diseases, particularly the Small-pox. It is represented by the figure of an ematiated woman, or rather a fury; with two heads and four arms. Tavernier, Chardin, and some English travellers, were obliged to spend a night in the temple dedicated to small-pox, and make their offerings to the Idol.

(3.) Travels to the source of the Nile.

had already been,) when they made themselves masters of Spain, Sicily, Naples and Narbonnesian Gaul.

In subsequent ages pregnant with great events, the propagation of the Small-pox was accelerated by great political commotions that precipitated nations against one another; such as the incursion of the Barbarians from the North, the Crusades in the East, the taking of Constantinople; and the discovery of America by Columbus. Fernando Cortez transported it to Mexico, the English to South America Canada and Greenland; and the Hollanders to the East Indies and Cape of Good Hope.

The Small-pox thus carried in the four quarters of the globe, extended from country to country, and in our days there is scarcely an inhabited spot but what has been subject to its unmerciful ravages. If the Arabians were the first to experience the disastrous effects of this disease, they were also the first to speak of it; particularly Rhazes. Constantine surnamed Africanus, first gave the name of Variola to the pustule alone. Since, this word has been used to designate the disease itself. The Italians call it Variola, the Spaniards Las Virulas, the Germans Pocken, the French Petite-Verole and the English Small-pox.

Preliminary Remarks.

The Small-pox is a formidable cutaneous disorder, highly inflammatory and contagious in its nature, which generally afflicts man but once in his life. It is preceded by chill, fever, pain, itching; and characterized by pustules, semi-spherically raised, containing at first a transparent fluid which soon becomes thick, purulent, concreted, and finally scabbs off; its ordinary duration is from fourteen to twenty-one days. This phlegmasia is sometimes superficial, and sometimes affects the whole thickness of the integuments, when the muscular system shews signs of inflammation and suppuration.

This disease generally begins with the vernal equinox, increases in summer, declines in autumn and disappears in winter. This however is not always the case, as it is sometimes stationary for years.

In large cities such as London, Paris, Naples, &c. &c, the Small-pox is never entirely destroyed, it reigns periodically every year; sometimes even twice in twelve months. These epidemics are very fatal in their commencement, but grow

much milder towards their termination. Generally speaking, the longer they are in making their appearance in any place, the greater are their ravages: owing we may believe, to the neglect of our safeguard, vaccination (1).

All that has been said varies according to climates, localities, and the state of the atmosphere which frequently develops this disease, and causes it to take place in all seasons; even in those which are considered the finest and healthiest.

Few are exempt from the Small-pox, all must sooner or later experience its effects, unless the predisposing or innate germ if existing, is destroyed by vaccination. Women are more liable to it than men, children than adults; and these last, more than the advanced in age, whose stiff fibres and dermoid system resist the absorption of the pestilential vapour. Independent of age and sex, inflammatory constitutions, those who are subject to epistaxis, ophthalmia and eruptive diseases, are particularly exposed to the Variola.—The above remark is also applicable to those who make too free use of wine. Sinopius observes that there are colonies among the Tartars, that feed only on meat and milk, which are destroyed by the scurvy; but are entirely exempt from the Small-pox.

In countries situated near the burning sun of the Equator,

(1.) Here arises a question concerning an eruption which has lately made its appearance in different parts of Europe and whose resemblance to the Small-pox, has caused the preventive power of vaccination to be much questioned: but as every thing respecting it has been so very ably discussed in the learned researches of Dr. Hennen and the extended and laborious inquiries of the acute and judicious Dr. Thomson; I might occupy pages on the subject, without disclosing any facts hitherto unknown. I shall therefore only remark that the eruptive disease alluded to, now prevails in our city, as it has done invariably in England, France and elsewhere, together with the Small-pox; and as far as my opportunities have been of observing the disorder, very few protected persons have yet taken it, and it has generally been in the very mildest possible form. When it has deviated from this benign character, the progress of cutaneous inflammation has been checked at so early a period, that the fluid contained in the vesicles has seldom reached the state of puss, the cutis has not been ulcerated, and consequently in place of a pustule been formed, nothing more than a tubercle is observed which soon scabs off, and as the occurrence of this eruption in those that have been vaccinated has excited no inconsiderable degree of fear; and might have the injurious tendency to limit the confidence of the public in the preventive properties of vaccination; I think it proper to state that the cases which I have met with in my practice and three in particular in my family, far from lessening in my opinion the value of vaccination; have induced me to be more than ever convinced of its modifying powers, and as every thing tending to elucidate the question and quiet the public mind, must be acceptable to our readers, I take this opportunity of inserting the following note of my friend Dr. Simons, who had the advantage of seeing the first cases that appeared in this city.—

In Dec. 1824, the Barque-Caledonian arrived from Belfast, having between 80 and 90 steerage passengers on board. On visiting this vessel, I found an eruptive disease prevailing, which resembled Chicken-pox, and which I at first thought was that disease;—but on removing those patients, and those whom I deemed susceptible to small-pox, to Quarantine, I was surprised to discover that two cases which were unprotected, had received the genuine Small-pox. They had the preceding fever on the fourth day the eruptions came out simultaneously and in the case which recovered, (one having died

the infection is more rapid, and the eruption takes place easier, and in greater abundance than in cold climates; accordingly, the Egyptians, Ethiopians and negroes, are more easily affected than any other inhabitants of the earth.

It has been a subject of doubt and curiosity, whether a person can be twice attacked with this disease, but we have pretty authentic proofs of its having occurred on the coasts of Malabar, and in Egypt; even as often as three times.—Sarconne says that he has seen at Naples, persons more than once affected even with the confluent Small-pox, and observes that this is not uncommon, "*non e' rarissimo.*" Forrestus's son suffered twice under it. Rosen asserts on the contrary, that in Sweden, he has never seen the Small-pox twice in the same individual. It is for the same reason that the Variola spread with difficulty in the more Northerly countries, such as Lapland, Norway and Russia, where it was unknown until the fourteenth century. As in the above latitudes it is so little contagious, that old persons can scarcely take it, there also the eruption is more painful and the disease more dangerous.

on the 7th day,) the pustules matured on the 9th, and began to dry on the 11th, and every strongly marked symptom characteristic of Small-pox appeared.

The important fact is, that the genuine and virulent Small-pox should be communicated from a disease in the vaccinated, seemingly so mild, and which resembled varicella, and of which I should have had no doubt, had not this circumstance taken place. This disease was precisely similar to what we denominate varioloid, which is now prevailing in Charleston.

The following is a Summary of my observations of this disease as it occurred among the passengers of the Caledonian. 1st. Not one who has been inoculated with, or had the Small-pox naturally, took this eruption, although there were more than twenty of this class, but what is more strange, the child that died of the Small-pox, (or Varioloid, as some who consider it a distinct disease assert,) was nursed by, and slept with the mother, who had the Small pox naturally, and she had not the disease. 2nd. Those who were vaccinated, had a disease mild in its Character, resembling varicella. I am not certain, but it is my impression that all of this class were not affected. 3d. Those who were unprotected viz had neither the vaccine or Small pox, took the genuine Small pox, in an aggravated form, of which one died.

I shall not enter into the merits of the doctrines advanced regarding the distinctive character of Varioloid, further than remarking that if it were a distinct disease, it should affect indiscriminately all who have been vaccinated or inoculated, which has not been the case in any Country, where it has prevailed; nor shall I say any thing of the contest between Dr Thomson and others, regarding the identity of Varioloid and Varicella, but content myself with observing that from what I have read and seen, I am more fully confirmed in the value of Vaccine. The disease appears so mild generally in those who are vaccinated, that it would appear very little less than rashness to inoculate with (Varioloid) or Small pox, more properly speaking, and thus run the doubtful chance of engendering a dangerous, contagious and aggravated disease. In the comparatively few cases in other Countries, which have been reported of those who were inoculated with Small pox, having had this Varioloid, I would remark that I would attribute such cases either to a deviation from a general law, which cannot impair it; or their having been inoculated from aggravated cases of Chicken pox, which were selected as mild cases of Small pox. For my part, I humbly conceive that varioloid is nothing more than Small pox modified by vaccine, notwithstanding the opinions of many others to the contrary.

THOS. Y. SIMONS, *Port Physician.*

Warm and damp weather is most favourable to its propagation, and Spring more propitious to it than Autumn and Winter.

The Small-pox may be communicated by mediate or immediate contact. By the immediate contact, the person infected imparts it to the one in health, and the more easily during the stage of suppuration. The disease can be communicated from the mother to the child during pregnancy, as there are cases on record: the contrary may also take place, that is to say, the mother may labour under the disorder without communicating it to the foetus. "*Exemplum mulieris, quæ tempore graviditatis in variolas incidit, infanti ab iis in utero primum et dein etiam post partum, satis diu libero manente, correptoque iis tantum post spatium aliquot annorum elapsum.* (Philos: Trans.) Most wonderful facts have been recorded by Mead, Mauriceau and others, showing the possibility of the child's contracting the disease in utero, notwithstanding the mothers being exempt from the disorder both during pregnancy and after confinement.—The case mentioned by Mead, is too well known to need our transcribing it.

By the mediate contact, the Small-pox can be transmitted by a number of objects. Linen, silk, woollen, and cotton stuffs, wood, metal and glass, once impregnated with the variolous poison, retain for a length of time its contagious properties; but the air is the vehicle most propitious to its propagation. Dr. Haygarth and others assert that the disease cannot be communicated to a great distance through the air: but as they do not bring any satisfactory proof to strengthen their assertions, I am inclined to believe with other eminent writers, that the miasma may be conveyed to a very great distance according to the direction of the wind; and in this way alone, can we account for the great number of persons taken with the disease at the same time, and in the same place. From hence it is that the Small-pox is almost always epidemic and rarely sporadic. Some authors say that in Egypt it is epidemic as is the plague.

The Variolous miasma disseminated through the atmosphere, has not always a deleterious effect; its diffusion becomes harmless if the body is not particularly predisposed to receive it. When this is the case, the most repeated contact and even inoculation will fail of producing the disease. It is probably owing to this state of the system, that the disor-

der is so much more fatal in one person than in another.

The poisonous vapour is absorbed by the surfaces exposed to the contact of the air, (1) and carried into the circulation where it mingles with our humours and remains sometimes without producing any obvious disturbance in the functions. A reaction commences by a slight febrile action whose duration is in proportion to the vital powers, and sometimes the eruption is not apparent before the tenth or twelfth day; owing to old age, exhaustion or hardness of the skin. This is what has made some writers falsely believe that it was not uncommon to see the Small-pox succeed the typhus fever.

The variolus virus, although always identic in its nature, does not always produce the same effects; for at one time it occasions the distinct, and at another the confluent Small-pox. It is more active in some epidemics than in others. Each epidemic has some particular feature which makes it differ from every other. These differences not only depend upon the susceptibility of the disease, and the irritability of the person affected; but also on the concomitant fever which is not always of the same nature, or some complication with other prevailing diseases, or on the constitution of the atmosphere, or other causes which it is impossible for us to discover; accordingly the Variola is either regular or irregular, benign or malignant.

The specific nature and *modus operandi* of the variolus poison is not yet known. It is thought by a modern chymist to have a great affinity to arsenic, from his having observed pustules and other symptoms perfectly analogous to those of the Small-pox, in persons who had drank wine, which had been clarified with arsenic, and in a child who had inhaled an arsenical vapour.

I will not here revive the theories of the Physicians of the middle age, on the innate germ, the fermentation of the humours and their purulent degeneration in the Small-pox. It is sometimes impossible for philosophy to explain a series of phenomena, the perfect knowledge of which it is beyond the sphere of human intelligence to attain. This mania for explaining every thing, has often fettered the science of medicine. It is more beneficial to mankind to study the natural

(1.) *Suspensa manet vis aere in ipso,
Et quum spiranteis mistas hinc ducimus auras,
Illa quoque in corpus pariter sorbere necesse est.*—*Lucret.*

course of diseases, their characteristic symptoms, their stages, their termination and the best mode of treatment sanctioned by experience.

We have at present acquired from observation, such a degree of precision in medicine, that we can no longer consider with some authors, the colour and the nature of the matter contained in the pustules, as sufficient reasons for dividing the disease in so many varieties; for instance, into horny, crystallized, vesicular, purulent, and scorbutic Small-pox.—Such divisions in fact can have no material influence either on the distinctive character of the disease, its progress or mode of treatment.

Some authors only regarding the eruption, have divided the Small-pox into discrete or distinct, when the pustules are few and the eruption progresses with regularity; and into confluent, when the pustules are so numerous that they appear to run into each other. Mead and others on the contrary, directing their attention to the apparent state of the vital powers, have called it benign when the febrile symptoms are slight and the strength not much impaired, and malignant when the fever is violent, exhibits a synochous or typhous type, and the patient is entirely exhausted.

But these varieties far from differing essentially, should only be considered as so many degrees of the same disorder depending on the greater or less tendency to cutaneous inflammation or to the irritability of the internal viscera. We might with as much reason, consider the various degrees of inflammation in the whitlow as establishing as many species of the disorder. A principle of nosology evidently absurd. However, I will retain the distinction of discrete and confluent, because the disease is generally so divided.

After these precursory remarks on the disease under consideration, I shall now proceed to the exposition of its symptoms

Of the distinct Small-pox, or Variolæ discretæ.

From the days of Rhazes, to those of Sydenham, no one has remarked the different stages peculiar to the Small-pox; a circumstance which plainly shews the difference between seeing diseases and observing them. The Variola does not always follow in its commencement the type traced by Sydenham. The description of this disease however, may justly be considered as the chef-d'œuvre of the English Hip-

pocrates. He distinguishes two stages, Doctrs. Thomas, J. M. Good and others, four periods; but I will consider it under five distinct stages.

1. *Latent Stage*.—By this is to be understood, the interval which elapses between the instant the miasma is introduced into the system by natural contagion, and the appearance of the first symptoms of the disease. The duration of this period is in inverse ratio to the activity of the variolous poison, and is supposed to be shorter in the inoculated, than in the casual Small-pox. But authors do not agree as to the duration of the latent stage in natural Small-pox, which must depend not only on the activity of the variolous virus, but also on the predisposition of the person who feels its influence; and it is on account of this predisposition which modifies the action of the virus, that it happens that the Variola communicated at the same time to a number of persons, displays itself sooner and occasions greater ravages on some than on others. Those who carry the germ of this disease, appear well during the latent stage which Boerhaave and Stoll believed to be a period of six or seven days, and more modern authors have estimated from five to twenty-one, and even twenty-four.

2d. *Stage—Febrile Action*.—The distinct Small-pox is sometimes so mild, that the eruption takes place without any precursory symptoms, and the disease proceeds through all its other periods, without any perceivable febrile action, and without confining the patient to his bed, disturbing his sleep or diminishing his appetite: but things do not always take such a satisfactory turn.

The disease is most commonly announced by anorexia, langour, and slight faintness. The eyes are red and tearful, the patient is melancholy, yawns frequently, has slight fits of cold and heat and finally a decisive ague, accompanied with pains in the head, chest, back, loins, &c. &c. and followed by a hot fever which generally lasts three days, and is attended on the second with nausea and vomiting. The third day the patient feels an itching in his nose, his eyes are glistening, his tongue red, and a sensation of burning heat is felt in the throat and stomach, which occasions a great thirst and a desire for acid drinks, the urine is red, scarce, or entirely suppressed: there is a tendency to perspiration in adults, and to drowsiness in children. These symptoms remain thus until the end of the third day, at which time the eruption

bite and in their full growth. When the swelling of the face diminishes, that of the hands and feet is at the highest degree, and the pustules scabb off in the same order.

Such is the course of the distinct Small-pox, free from all complications, it runs successively through its stages, and naturally tends to a happy termination.

The fever which accompanies the Variola, is not always of the same nature; most frequently it is of the inflammatory kind, and varies in severity according to age, sex, climate, season and constitution of the patient. It is the opinion of Stoll, that even when the eruption does not take place, it is not less efficacious, and secures from a new infection, *Hæc utut minima persœpe nullisque aut vix ullis pustulis judicata, tamen vindicat a morbo.* (1.) Sometimes the fever maintains its inflammatory character throughout the disease, and at others, its nature is changed during the second stage, and it becomes typhoid either by errors committed in the treatment or on account of the atmosphere's being hot and damp. The fever then becomes a dangerous complication which changes the nature of the primary disorder. The Small-pox can also be complicated with a gastric affection, or the measles, the peripneumony, a cerebral congestion, the dysentery or the intermittent fever. When this last complication exists, the intermittent fever sometimes disappears and returns when the Small-pox is at an end.

Of the confluent Small-pox.

We do not perceive in this variety of the disease, that regular succession of symptoms just described, and that natural tendency, to a favourable conclusion: on the contrary, its course is generally so much disordered, that the different stages can scarcely be distinguished.

The violence of the symptoms from the origin, sufficiently foretells the formidable character the disorder will exhibit throughout. The chill is severe and the fever hot; the pulse is either hard and thready, or full and strong, the head-ach, is intense and the irritation of the stomach so great, that the patient is tormented with nausea and obstinate vomiting, frequently accompanied by diarrhoea. At times the skin is parched, and there is no apparent perspiration; and at others, although the perspiration is abundant, the skin still

(1.) Aphor, 523.

retains its burning heat. The urine is scarce, very red and sometimes of blood, the eyes are inflamed and cannot endure the light; the pain in the back and lumbar region is violent, the prostration of strength great and the patient inclines to drowsiness, delirium, or is subject to subsultus tendinum and convulsive fits; some even expire before the appearance of the eruption.

The eruption does not take place by degrees, but abruptly, in great abundance, and all over the body at the same time. It shows itself on the second or third day, sometimes on the first, but never later than the third; unless there is a complication of typhous or malignant fever, or acute pains, such as those occasioned by enteritis, pleurisy &c. &c, whose intervention disturbs the natural course of the disease. The eruption, which in the distinct Small-pox, always calms the symptoms, does not moderate them in the confluent: on the contrary, the fever is exasperated and marked by a paroxysm every night; it aggravates all the symptoms and produces hæmoptisis, epistaxis, hæmaturia and apoplexy.

The eruption is thicker than in the distinct Small-pox, the pimples are not round, but rather flat and oval. Those on the hands and feet are larger than on the rest of the body, and they appear to diminish in size from the extremities towards the trunk. Sometimes they look so much like the measles, that the diseases might be confounded, if proper attention was not paid to the attending circumstances.

In the progress of the disorder, the pimples rise, approximate more and more, and form red clusters, resembling the erysipelas which cover the whole of the face. The tumefaction becomes general, the face is prodigiously swelled, the throat is tumefied and the patient feels an irritation and constriction which renders deglutition very difficult. These symptoms are occasioned by the pimples which are developed in the mouth and pharynx: the nostrils are sometimes so much swelled by them, that respiration must take place, through the mouth. The irritation or inflammation, appears also to extend to the whole of the intestinal canal.

Towards the seventh day, the period of suppuration, the matter contained in the pustules becomes white, and the whole extent of the skin appears as if covered with a white pellicle; this pellicle grows harder every day, and occasions a great tension which creates much pain, it takes a brownish

being near, they assume a more alarming aspect. The fever becomes violent, the pulse full and quick, and the respiration laborious. It is also at this period, that hæmorrhages of the nose, uterus &c. &c. are to be observed in adults, and delirium, convulsions and epileptic fits in children: These last symptoms are said by Sydenham to presage a Small-pox of benign character, and by Mead and others to be more frightful than dangerous; but I have reason to believe, not only from the authority of Dr. Good, but from the result of my own experience, that those alarming symptoms have not sufficiently occupied the attention of Physicians. The redness of the skin is very intense, particularly about the facies; and a burning heat, and an intolerable itching as if pricked with pins felt all over the body, announce that the eruption is going to take place. Children sometimes incline to diarrhoea from this moment, and adults experience abundant sweats.

The fourth day although admitted by Sydenham to be that of the eruption, is contradicted by Cullen who asserts that among more than a thousand cases of Small-pox, that he has attended, he has never seen more than six, in which the eruption was retarded to the fourth day: but this apparent diversity of opinions, may I think be accounted for, if we remember that Cullen's patients were mostly children, while those of Sydenham were generally adults.

3d. Stage—Eruption.—When the disease progresses with regularity, the eruption takes place on the fourth day, sometimes sooner, but seldom later; and is manifested by little, red, and insulated specks similar to flea-bites. They are first to be seen about the legs, forehead, neck, chest, arms and hands; and then on the back, thighs, legs and feet. They seldom appear on the abdomen or the soles of the feet. The eruption is generally completed in twenty-four hours, when the intensity of the symptoms diminish, and the fever ceases, sometimes never to return, unless suppuration takes place, which is not always the case. The patient is considerably relieved, and still inclines to perspiration if an adult. The fifth day, the pimples begin gradually to increase in number, size and redness: the spaces which divided them, become inflamed, tumefied, and occasion a painful sensation, whose violence and duration, is in proportion to the number of pustules, and the lastingness of the symptoms. The sixth day, the pustules widen, the face is tumefied and the eye-lids

are so much swollen, that the patient is deprived of sight for some time, without however, experiencing any ultimate ill effects. The tumefaction of the eye-lids very much resembles that, which is produced by its cedematous infiltration. If there are pustules on the eyes, they frequently occasion violent ophthalmice, and those in the mouth and pharinx, produce sometimes a severe angina, and always an abundant salivation, which becomes so thick towards the eleventh day, that it can scarcely be spit up: this is accompanied by hoarseness. If the pustules are numerous, the swelling of the hands soon succeeds that of the face. It has also been remarked, that it is not uncommon to see a second eruption in the interstices of the first.

4th Stage—Suppuration.—It is between the seventh and eighth day, that it may be properly said, the suppuration begins. At that period we discover on the top of each pimple a small vesicle, containing a transparent fluid, with a slight depression in its centre. The eighth day they continue to fill up, and the ninth the pustules have attained their full growth, when they are generally the size of a pea. The tenth day the matter contained in the pustules gradually thickens and is changed into a yellow puss, resembling honey. If the pustules are numerous, and the face much swelled, the fever returns.

Some writers are of opinion, that this secondary fever is occasioned by the formation of the puss, and others that it is produced by its absorption. The pulse in this case is astonishingly quick, but if the pustules are few, the fever is so trifling that it can scarcely be observed. Towards the eleventh day the pustules break, a matter resembling honey is discharged, and they loose their sinoothness.

5th Stage—Scabbing.—The swelling of the face gradually diminishes, the pulse becomes soft, the fever lessens and the eye-lids are unglued: the rest of the purulent matter thickens and forms crusts, which scabb off towards the fourteenth or fifteenth day. They are succeeded by thin white shells, whose fall shows superficial pits, which retain for some time a dark red colour.

The different parts of the body covered with pustules, exhibit alternately the same phenomena. The inflammation and suppuration follow the same course as the eruption: that is to say, when the pustules of the face begin to turn yellow and dry up, those of the hands and inferior extremities are

bite and in their full growth. When the swelling of the face diminishes, that of the hands and feet is at the highest degree, and the pustules scabb off in the same order.

Such is the course of the distinct Small-pox, free from all complications, it runs successively through its stages, and naturally tends to a happy termination.

The fever which accompanies the Variola, is not always of the same nature; most frequently it is of the inflammatory kind, and varies in severity according to age, sex, climate, season and constitution of the patient. It is the opinion of Stoll, that even when the eruption does not take place, it is not less efficacious, and secures from a new infection, *Hæc utut minima persœpe nullisque aut vix ullis pustulis judicata, tamen vindicat a morbo.* (1.) Sometimes the fever maintains its inflammatory character throughout the disease, and at others, its nature is changed during the second stage, and it becomes typhoid either by errors committed in the treatment or on account of the atmosphere's being hot and damp. The fever then becomes a dangerous complication which changes the nature of the primary disorder. The Small-pox can also be complicated with a gastric affection, or the measles, the peripneumony, a cerebral congestion, the dysentery or the intermittent fever. When this last complication exists, the intermittent fever sometimes disappears and returns when the Small-pox is at an end.

Of the confluent Small-pox.

We do not perceive in this variety of the disease, that regular succession of symptoms just described, and that natural tendency, to a favourable conclusion: on the contrary, its course is generally so much disordered, that the different stages can scarcely be distinguished.

The violence of the symptoms from the origin, sufficiently foretells the formidable character the disorder will exhibit throughout. The chill is severe and the fever hot; the pulse is either hard and thready, or full and strong, the head-ach, is intense and the irritation of the stomach so great, that the patient is tormented with nausea and obstinate reaching, frequently accompanied by diarrhoea. At times the skin is parched, and there is no apparent perspiration; and at others, although the perspiration is abundant, the skin still

(1.) Aphor, 523.

retains its burning heat. The urine is scarce, very red and sometimes of blood, the eyes are inflamed and cannot endure the light ; the pain in the back and lumbar region is violent, the prostration of strength great and the patient inclines to drowsiness, delirium, or is subject to subsultus tendinum and convulsive fits ; some even expire before the appearance of the eruption.

The eruption does not take place by degrees, but abruptly, in great abundance, and all over the body at the same time. It shows itself on the second or third day, sometimes on the first, but never later than the third ; unless there is a complication of typhous or malignant fever, or acute pains, such as those occasioned by enteritis, pleurisy &c. &c, whose intervention disturbs the natural course of the disease. The eruption, which in the distinct Small-pox, always calms the symptoms, does not moderate them in the confluent : on the contrary, the fever is exasperated and marked by a paroxysm every night ; it aggravates all the symptoms and produces hæmoptisis, epistaxis, hæmaturia and apoplexy.

The eruption is thicker than in the distinct Small-pox, the pimples are not round, but rather flat and oval. Those on the hands and feet are larger than on the rest of the body, and they appear to diminish in size from the extremities towards the trunk. Sometimes they look so much like the measles, that the diseases might be confounded, if proper attention was not paid to the attending circumstances.

In the progress of the disorder, the pimples rise, approximate more and more, and form red clusters, resembling the erysipelas which cover the whole of the face. The tumefaction becomes general, the face is prodigiously swelled, the throat is tumefied and the patient feels an irritation and constriction which renders deglutition very difficult. These symptoms are occasioned by the pimples which are developed in the mouth and pharinx : the nostrils are sometimes so much swelled by them, that respiration must take place, through the mouth. The irritation or inflammation, appears also to extend to the whole of the intestinal canal.

Towards the seventh day, the period of suppuration, the matter contained in the pustules becomes white, and the whole extent of the skin appears as if covered with a white pellicle ; this pellicle grows harder every day, and occasions a great tension which creates much pain, it takes a brownish

tint, but never that yellowish appearance or that consistency which is observable in the distinct Small-pox.

All the symptoms increase during the period of suppuration, and the violence of the fever is in proportion to the number of pustules. The patient is in great agitation, light-headed &c. &c, the soreness of the throat at this period is very distressing. Towards the fifteenth, twentieth or twenty-fifth day, the pellicle scabbs off, and is soon succeeded by thin shells which falling, present deep pits, ulcerations and sometimes unsightly seams; a convincing proof that the disease is not confined to the chorion as in the discrete Small-pox; but extends to the cellular membrane. The pits or scars retain for some time a deep red colour which ultimately wears off, and the skin recovers its natural colour, but not its smoothness.

The salivation and diarrhoea are two important symptoms to be observed, and which frequently accompany the confluent Small-pox; the first in adults and the latter in children. The salivation begins sometimes with the eruption, or a day or two after. The saliva is at first very thin and in great quantities; but thickens by degrees and about the eleventh day becomes so viscous that it occasions great anxiety, thirst, coughing, and frequently threatens the patient with suffocation, it is the more alarming as it soon produces ulcerations on the lips and inside of the mouth. As the salivation diminishes, it is succeeded by the swelling of the feet, hands and face; or by alvine evacuations, copious sweats and discharges of urine.

The diarrhoea is later in making its appearance in children, than the salivation in adults; but when it begins, it lasts as long as the disease: this diarrhoea often proves favourable, from being the means of freeing the primæ viæ from the indigestible matter with which it is frequently surcharged, and which produces an irritation, that becomes an obstacle to the eruption. However, if the diarrhoea grows watery at the scabbing of the pustules, it may sometimes prove fatal. The diarrhoea is less beneficial to adults who generally incline to perspiration.

Nosologists, have admitted several kinds of confluent Small-pox, which are but modifications of that just described. The only one deserving attention, is that in which the pustules are black, as well as the intervals which separate them, and not much elevated; if opened, they discharge a

dark coloured blood and appear gangrenous. This is a complication with the typhous fever. In some, there is hæmaturia, others void blood by the intestines, nose, mouth and even by the eyes; petechiæ are perceived on different parts of the body, particularly the chest, the patient cannot sleep, and is distressed with convulsive reachings, his body exhales a foetid or cadaverous smell, abundant sweats supervene, the discharge of urine is suppressed and delirium, phrenzy and death, close this scene of anguish.

It is my belief that the typhus or malignant fever, which generally prevails with the Small-pox, and is so often mortal, is nothing but the Variola itself which proves fatal previous to the eruption; and from hence arises the incorrectness of the calculation of those who only ascribe to Small-pox, the deaths which occur after the eruption has taken place.

The Small-pox does not always end by the desiccation of the pustules, in the discrete, it may terminate by resolution on the seventh day, without the supervention of any dangerous consequences; or by a copious epistaxis, and yet secure the patient from a future attack. When the crisis is complete, the distinct Small-pox generally strengthens the constitution: it is also the means of curing obstinate diseases which exist at the time of the attack. I knew a young girl, who had scrofulous tumours on the neck, which had resisted every remedy, she took the Small-pox, it was benign and after this new disorder, the scrofula easily yielded to a mercurial treatment.

The confluent Small-pox, is usually attended with melancholy consequences such as obstinate ophthalmiæ, ulcerations and spots on the cornea, blindness, deafness, chronic inflammation of the internal viscera, slow fevers, paralytic affections, abscesses in the articulations or atrophy of the limbs.

It appears from the result of the inquiries of a great number of physicians into the morbid anatomy of this disease, that they have never found traces of the eruption in the viscera or cavities; I was however present at the opening of a child a few years ago in Paris, who died of the Variola: small pimples were found here and there in the duodenum with a slight depression in their centre. In the jejunum they were more apparent and formed clusters which resembled those of the face; at the end of that intestine and throughout the ileum, the pimples were as numerous as on the surface of the

body, the great curvature of the colon was covered with larger and more elevated ones; and they were so thick in the rectum that they touched each other. I have also seen a pustule whose edge was perfectly black and situated on the muscles of the larynx, which had occasioned death by suffocation, in a case of distinct Small-pox. In children, we sometimes find the bones arroded and fractured, in complications of hæmorrhages and typhus fever, the blood is found in a state of dissolution.

In the first days of the disease, it is very difficult to determine whether it is the Small-pox, as its symptoms resemble those of other cutaneous affections, such as the measles, the scarlatina and the varicella, or inflammatory fevers. If however, a variolous epidemic prevails where the patient resides, he has been exposed to its contagion, has not had the disease or been vaccinated and is in early youth, the diagnosis becomes almost certain.

When the pimples have appeared, the Small pox may yet be mistaken for the measles or a miliary eruption. We must however remember that the measles are generally preceded by a troublesome dry cough, the pimples of a more irregular form than those of the Small-pox; that they are of a bright red and in clusters. As to the miliary eruption, it is still more irregular and much less elevated; but it is impossible for us to observe these differences in our coloured population.

When the characteristic symptoms of the disease are developed, it is scarcely possible to mistake it for any other, even the varicella, to which it then has the most resemblance, and may it not be from a want of discrimination between those two diseases, that persons are said to have been twice affected with the Small-pox, and that even at the present time, the efficacy of vaccination is doubted.

Prognostics.—The Variola is an eminently dangerous disease. In different ages, and in various countries, its ravages have been so great, that it has been considered as a pestilence. No disorder baffles the skill of the Physician, more than this; in the morning all the symptoms prognosticate a happy termination, towards noon or night the scene is sadly reversed, and that without any apparent cause. As all constitutions are not equally liable to the infection; so we find its effects to be different, in different persons. There are occult and unaccountable predispositions which continually

lead us into error: thus, those we would suppose likely to run most risk in an attack of this disease, are affected with a benign Small-pox; while those we think would sustain it best, are disfigured with hideous seams, or carried off by an agonizing death. There are whole families to whom it proves fatal. Women and children are generally observed to support it better than men, from the flexibility of their system. The Small-pox is particularly dangerous to those whose fibres are stiff, and those who are in the habit of anointing their bodies with oils, or rubbing with essences and rosins, as the Indians, Malaysians and Africans.

Aged persons, those of inflammatory constitutions, of great nervous irritability, or addicted to wine and debauchery, are in the most eminent danger; while those on the contrary, of sober habits, and who live according to the strict rules of temperance, run little risk. Persons of the most robust health, (*quorum sanitas summa, quæ semper Hippocrati lubrica dicitur*) are also exposed to great peril. Those who have external emunctories, such as issues, ulcerations, tynia and Gonorrhœa, (1) easily contend with it; but when the solids and fluids are already vitiated, that ulcerations of the lungs, obstructions of the glands, and worms in the intestines exist; the Small-pox assumes a most alarming character. The Variola may also be complicated with dentition, pregnancy, confinement, the first appearance of the catamenia, and induce fatal consequences.

Variolous epidemics generally assume a benign character, when the atmosphere is moderately warm and damp; but if the weather is rainy, hot and oppressive, the disease is usually confluent and dangerous. The Small-pox is also of a bad nature in cold and damp weather, as in Autumn and Winter. In dry weather, whether cold or hot, the Variola is particularly fatal, because it encourages the inflammatory disposition of the disease; and is still more so, when the rheumatism or dysentery is prevalent. The Small-pox is mildest in tem-

(1) Circumstances, tending to prove that persons affected with gonorrhœa run also little risk of contracting the yellow fever; have fallen under my immediate observation during the two last epidemics which prevailed in our city. In 1819, a young man, stranger to this climate, who continually visited those affected with the yellow fever, and who had the gonorrhœa, escaped the disorder. This fact I at first attributed to chance; but in 1824, the same supposition appeared to me almost inadmissible, as two persons whom I was attending for Gonorrhœa, had been here but a few months previous to the epidemic, were very intemperate men, and not only resorted continually to places where the fever raged; but actually lived in a house where several were ill, and one died of the yellow fever; without having experienced the slightest indisposition through the season.

perate climates, as Persia, is more severe in Egypt and Greenland ; but the Tartars and Kalmucs are the people who suffer most from its ravages. In England it is more fatal than in France ; in Russia and some parts of Germany, at least one third of those attacked, are its victims, in Sweden about a tenth ; and always more girls than boys.

The distinct Small-pox, is generally less dangerous than the confluent, and when sporadic, less so than when epidemic. To judge whether the Variola is confluent or discrete, it is only necessary to observe the number of pustules on the face : if they are few, we may auger well of the disease ; even when numerous on the rest of the body.

Convulsions and epileptic fits in children, are the forerunners of the eruption, and according to some authors, announce a benign Small-pox. In adults and the advanced in age, these symptoms are of bad omen.

Hæmorrhages of the nose are favourable when they occur early in the disease.

When previous to the eruption, the urine is whitish, resembling whey, and the pulse is full and soft, we may hope for a favourable termination.

Boerhaave, Van-Swieten, Sydenham and other great observers, have remarked that the slower the eruption is in coming out, the milder the disorder ; unless the delay is occasioned by a want of energy in the vital powers.

When the eruption has taken place regularly, the pimples are few, well formed, with a bright red circle at their base, and become successively white, opaque and yellow, the fever abating or ceasing after the eruption, the skin soft, perspiration gentle, respiration and expectoration free, and urine copious and light coloured, no congestion towards the head or obstruction in the abdomen ; when the swelling of the face continues until about the eleventh day and there is then a moderate diarrhœa, we have every reason to presage favourably.

On the contrary, the Physician will derive a fatal prognostic from the violence of the fever and other symptoms that precede the eruption, if there is any severe local pain particularly in the chest, resembling that which is felt in pleurisy, which does not abate or disappear, after the eruption has taken place.

We may anticipate a confluent or typhoid Small-pox, if from the beginning, the eyes are inflamed, the pulse quick

and small, the skin dry, hot, and sore to the touch; and there is a visible beating of the carotid and temporal arteries.

If the eruption breaks out suddenly, and is irregular, if there is frequent syncope, violent sweats, flattening of the pustules with a dark circle around them, a constant desire of making water accompanied with colic, livid and black spots, the face not swelled about the period of supuration, Hæmaturia and other hæmorrhages, a tumefied abdomen painful to the touch, delirium, convulsions, subsultus tendinum, exhausted strength, alteration in the voice, loss of memory, and the frequent twinkling of the eyes, we must expect fatal consequences.

Treatment.

If the Small-pox in its origin, was more fatal than it is at present, it is not that it was of a more malignant nature, or that the disease has degenerated; but because Physicians were ignorant of its proper mode of treatment, to which they have since, directed their particular attention.

The preservative treatment was early resorted to, consisting first in the use of mercury, afterwards inoculation, and lastly vaccination: for there is no disease (except the plague,) against which medicine has so strenuously exerted itself. Boerhaave considered mercury and antimony as specifics against it, Lobb recommended æthiops mineral; Berkley, tar water, Etmuller, and Langius, the tincture of myrrh. Rosen says, that the use of mercury prevents the Small-pox, or lessens its violence; and was in the habit of giving to children that he wished to guard against the contagion, preventive pills, consisting of calomel, camphor and gum guaiacum, which he ordered to be taken for three months, at first twice, and afterwards three times a week, but all those means have been unavailing.

Vaccination has happily succeeded those ineffectual prescriptions. Before its discovery, inoculation had done much to ameliorate the violence of the Small-pox, but we were anxious for something more efficacious, and it was reserved for the immortal Jenner to render to mankind this incalculable service.

It is impossible to lay down any positive rule for the treatment of the Small-pox, as it must vary according to the indications which occur in each of its stages.

2d Stage.—Febrile Action.—As our success very much depends on the means employed in the commencement of this stage, we must be careful not to omit any thing that may be essential; therefore as soon as we perceive the first symptoms of the disease, we must put the patient on a strict regimen, forbidding the use of animal food and wine, prescribe cooling drinks, and for nourishment, baked and boiled fruits.

If the patient is a sucking infant, the nurse must be bled in case of plethora, and be denied animal food, spices &c. and must resort to diluents to medicate her milk, as much as possible.

In all cases, we must prevent the patient from going to bed before the fourth day, as the heat will accelerate the eruption which it is our business to retard as much as possible, and as many are still prejudiced in favour of the heating system, the danger of which was first exposed by Sydenham. When it is necessary for the patient to lay, it must be on a mattress, his covering must be light, his clothes frequently changed, he must occasionally walk about the room, which must be kept cool, and the air often renewed. In Summer, when the heat is oppressive, the room should be every now and then sprinkled with cold water, which in evaporating, absorbs a part of the caloric, and produces an agreeable temperature.

Injections are also usefully employed; they clear the digestive canal, quiet the intestinal irritation, relieve the head-ach, and lessen the thirst and difficulty of breathing. Their use must be discontinued towards the eruptive stage.

In case of bilious symptoms, in order to free the primæ viæ from indigestible matter, which might by irritation prevent the eruption, (in consequence of the great sympathy existing between the digestive and dermoid systems,) we must prescribe tartar emetic, sweetened with manna, as is highly recommended by Huxham in such cases.

The eruptive fever, may also be complicated with a mucus fever, particularly in children, (to whom the diarrhœa is salutary,) tartar emetic, is also employed in this case, and may be administered every other day with manna; Hoffman used it successfully with children, who were weak, and had a difficulty of breathing. Absorbents and anthe lmentics are to be used when the evacuations are green and offensive. When the fever is free from complications, but is very violent, (which is often the case) with a strong and full pulse, it

must be abated by bleeding, and an antiphlogistic diet; a method first employed by Rhazes, and whose utility has been confirmed by Sydenham. Bleeding in particular, is one of the most propitious means of lessening the symptoms and assisting the eruption, when it seems to take place with difficulty; this appears to be solicited by nature itself, as we at times find all the distressing feelings alleviated by an epistaxis.

Warm baths in relaxing the fibres, diminish the spasms, and encourage the eruption, they have often been employed with great success by Physicians. The peasants of Hungary, immerse their children every day when they have the Small-pox, and give them whey to drink. Vapour baths may be used instead of warm water. Emetics are useful not only as sudorifics; but also on account of the property they possess of quieting the irritation of the stomach, which is often shewn by spontaneous reachings and a pain in the epigastric region.

Bleeding is most necessary in plethoric habits, and in those who live highly, when inflammatory diseases prevail and the wind blows cold and dry; it is hurtful, on the contrary, in indigent persons and phlegmatic constitutions, when the weather is cloudy, warm and damp, and malignant diseases prevail; it is also contraindicated when the fever lingers, the pulse is slow, the vital powers reduced, and the extremities cold; in this case it will be proper to administer tonics, as ice-water, wine &c. and blisters must be applied to the legs.

When there is very great oppression, and a tendency towards organic inflammation, we must bleed as much as the indication appears to require; to children, leeches should be applied behind the ears, and these means assisted by cooling drinks, such as chicken broth, barley water with nitre, lemonade, black berry syrup, and other acidulated drinks. If the blood flows with too much impetuosity towards the head, and there is great tension in the Hypochondria, we must bleed in the foot, and make scarifications on the legs to divert the congestion and by attracting a number of pustules to those parts, endeavour to prevent a confluent Small-pox. If there are frequent convulsive fits, the remedies must vary according to the producing cause: sometimes baths, and sometimes antispasmodics are to be used.

Opium, which accelerates the circulation of the blood and

inclines it to the head, is injurious in this stage of the disorder, if the fever is of an inflammatory character ; unless there is constant reaching, great diarrhoea and severe pain which imperiously demand its use. Sydenham and Cullen also recommend it in violent convulsions.

3d. Stage—Eruption.—On the approach of the eruption, we must prescribe gentle diaphoretics, such as a weak infusion of elder or linden tree flowers, Avicenna and afterwards Forestus considered a decoction of dried figs, very salutary, as having a tendency to the skin, Fracastorius ascribes the same property to a decoction of lentil. We should also at this time pay particular attention to the eyes which must be frequently washed with a soft sponge, dipped in milk and water, or flax seed tea.

If on the first appearance of the eruption, there is great anxiety, violent headach and subsultus tendinum ; these symptoms may be removed by cupping on the shoulders. I have frequently seen this operation immediately followed by the most salutary effects, the result might probably be the same, if the application was made to the legs. The skin being very thick on the hands and feet, the eruption takes place with great difficulty, and the patient feels acute pain in those parts which may be relieved and the eruption facilitated by their immersion in warm flax seed tea, if there is a slight epistaxis, we must assist nature by pricking the nostrils with hogs bristles, and not hesitate to use the lancet during menstruation, if the discharge does not appear sufficiently abundant to produce the desired effect.

Rosen recommends the application of sinapisms to the face even after the pustules have appeared, as a means of preventing the deep pits which are their usual consequence.

This would be a similar result to the one reported by Ambrose Parey, of a leprous face covered with pustules, which was perfectly cleansed by applying a blister.

When the eruption takes place easily, there are but few pustules on the face, and no signs of plethora, the disease requires no remedy ; but if the eruption is retarded, and it is not in consequence of plethora, we must resort to emetics whose diaphoretic properties may be relied on.

If the fever does not abate or cease after the eruption, and the pulse is still full and hard, bleeding becomes necessary, and blisters and sinapisms must be immediately applied, should the eruption suddenly disappear ; but if this is occasioned by

a want of action, tonics such as bark wine &c, must be administered.

It is also during the period which elapses between the eruptive and secondary fever, when it is so important to keep up the eruption, and facilitate suppuration, that narcotics are beneficial, as besides their soothing properties, they have a tendency to the skin. Their use is less urgent in the distinct than in the confluent Small-pox, in this case they often produce wonderful effects, by lessening the sufferings occasioned by an acrimonious matter that fills up the pustules, keeping up the perspiration; and thus preventing the absorption of the pus. Dehaen thought so highly of narcotics, that he was in the habit of giving morning and evening, beginning at the third day of the disease, from one ounce to an ounce and a half of a syrup composed of the white poppy.

Both Cullen and Sydenham approve of this method, provided it does not occasion constipation, and gave opium daily, as long as the patient had a motion every other day. Storck administered to those of his patients who were weak, a tonic mixture with laudanum, but this manner of giving opium, I do not consider so advantageous. Tissot on the contrary, was very cautious in the administration of narcotics, and never allowed them, but when the eruption was extremely painful, particularly in children, to stop excessive diarrhoea, and lessen the violence of the colic often induced by a long use of cooling drinks. In the administration of narcotics, we must pay due attention to the degree of excitement which may indirectly be produced by the opium, and to its tendency towards checking the diarrhoea which is so often salutary to children during the period of suppuration.

4th Stage—Suppuration.—If the secondary fever displays itself with too much violence, the lancet may yet be used without any fear of interrupting the suppuration. Cullen has seen bleeding in such cases, produce instantaneous and happy effects, although there had been but a small quantity of blood taken. He recommends it during this stage whenever the pulse is quick and full, and orders it to be repeated if the fever does not abate. It is thus that when in large abscesses there is plethora and excess of heat, the suppuration is promoted by bleeding; it succeeds still better when the constitution of the patient and that of the atmosphere are essentially inflammatory. Should there be a complication of Angina, pleurisy, peripneumony, hæmoptisis or dysentery,

the treatment suitable to local inflammations is to be employed. *Prima ratio*, says Stoll, *habenda est inflammationis*.

During the secondary fever it is essential to keep up the salivation to which adults particularly incline. It begins when the eruption is completed, or a short time after, and is very viscous until the eleventh day. It may early be assisted by appropriate gargles, as the decoction of mustard seed, or the oximel, when it is dilatory or suppressed, without being succeeded by the swelling of the face and hands; a circumstance which is generally attended by fatal consequences. Opium is extremely useful in this case, experience having proved that it very much excites, and often has recalled the salivation.

When this discharge is checked and gargles have been unavailing, when thick phlegm obstructs the chest and stomach, that deglutition is almost impossible; we may venture an emetic, but with great caution as the consequences may be dangerous. In this case, I would recommend as a means of preventing suffocation, that the patient should receive into his mouth through a tube, the steam of a decoction of mallows, myrrh, honey and vinegar, I have found the greatest success from this application.

When the salivation disappears, the swelling of the face subsides, and the strength is exhausted; Hoffman recommends the *æthiops mineral*: might it not also be excited by the use of mercury, or by its combination with opium and bark.

The diarrhoea must not be checked, unless it prostrates the strength, the pustules are depressed, and their intervals of a livid colour; when mild as tringents, and narcotics must be administered.

It frequently happens, during the secondary fever, that a repercussion of the variolous matter takes place on some of the organs, and occasions death, in cases of Small-pox of the most benign character. This superabundance of humours, may be dispersed by diuretics, antiseptics and acidulated diluents; mineral acids have been particularly recommended; but I think cathartics will better, and more speedily procure the desired effect. Mead and Huxham, highly extol their virtue in such cases, without giving a preference to any particular kind; but as mercury, (the German *remedium pancreston*), has been so highly recommended as a corrector of the Small-pox, by eminent Physicians, and even

considered a specific by some ; I do not hesitate to prescribe it combined with jalap, although I have not ascertained by the test of experience, whether it has more intrinsic virtue than other cathartics.

In France, they are indebted for this purging system in the secondary fever, to the school of Montpellier, which took the idea from the Arabians, to whose practice its pupils adhered for a long time. When the pustules flatten, are surrounded by a purple circle, and the swelling of the face disappears, they recommend to purge briskly, disapprove of the use of tonics and blisters, but expect wonders from cathartics.

In the coma somnolentum, which supervenes during the secondary fever, the application of blisters to the back of the neck has been tried, but if any good effects have ever resulted from their use, it may be attributed to their evacuating properties, for in this soporous affection, an increase of irritability and inflammation, must be hurtful, besides their injurious tendency to constipate and diminish the secretion of urine.

When there is a congestion towards the chest, the best means to be resorted to, are large blisters applied to the seat of oppression or to the legs, a free use of barley water sweetened with honey, and a few doses of kermes mineral. Baglivi mentions the case of a child labouring under very great dyspnœa, in consequence of the repercussion of the variolous eruption, from whom he drew about two pounds of blood by cupping all over the body ; he afterwards had the patient wrapped up in warm cloths, and the next day, anointed all over with a mixture of sweet oil and spirit of ammoniac, which recalled the eruption in great abundance, relieved the oppression, and the child recovered. The same author asserts having thus successfully treated the repercussion of other eruptions which occurred during malignant fevers.

Should a difficulty of making water supervene, Sydenham and others, recommend that the patient should walk about the room : I cannot imagine what benefit is to be derived from this practice, and I even think it may be attended with dangerous consequences. Relief however must be procured, for the affection of the head soon succeeds a suppression of urine. If the urine is thick, but without burning, a strong decoction of the *triticum repens*, (1) the dandelion with the salt of amber, and glauher salts, which is at once

(1) Dog's grass.

laxative and diuretic, can be administered, and the muriatic acid, if the fever is violent.

If the emission of urine is attended with much pain, the patient must take chicken broth, mild narcotics, and injections of flax-seed tea and sweet oil, and if the irritation does not subside we must bleed repeatedly.

Of all the complications of this dreadful malady, none are more alarming than hæmaturia, bloody stools and hæmoptisia; which must be attacked by bleeding, until the pulse is reduced, and the suffering abated: blood letting in this case, produces a salutary revulsion from the seat of hæmorrhage; but if to these symptoms, are added a weak pulse, cold extremities and fainting fits, death is almost certain. The most powerful remedies now to be used, are alum, sulphuric acid and bark.

Should the suppuration take place regularly, and the pustules become white, I would strongly recommend their being opened all over the body, and particularly on the hands and feet, where the skin is so thick, with a sharp instrument, to give egress to the matter, which frequently occasions distressing consequences; the surface must afterwards be washed with warm water and a soft sponge, this to be repeated twice a day, and the clothes frequently changed. Another advantage to be derived from this method, is that pustules thus opened, seldom leave any pits.

5th Stage—Desiccation.—During the desiccation of the pustules; particularly if a heating treatment has been employed, it frequently happens that a fatal diarrhoea ensues; the drink in this case must be milk and water with an occasional use of narcotics; blisters can also be applied, but their effects are more tardy. We must not confound this diarrhoea with the salutary one to which children are subject, and which may easily be recognised, by its being unattended with griping, its not weakening the patient, and not interfering with the salivation.

When the secondary fever is over, the pustules are dry and the patient not too weak; the warm bath or ablutions of warm water are frequently to be used, the clothes changed at least twice a day; and cooling cathartics given every now and then. Should there still be slight febrile symptoms, bark, Mynsicht's Elixir of Vitriol, or other tonics are necessary, after which the patient must use gentle exercise in the open air.

ART. II.

A case of abscess of the Antrum Maxillare, attended with extensive caries of bone, by J. DE LA MOTTA, M. D.

TO THE EDITORS OF THE CAROLINA JOURNAL.

Gentlemen.—Permit me to renew the declaration, that the science of Medicine and Surgery, cannot be better promoted, than by a register of cases, interesting in their origin, progress and termination. The interchange of medical learning, communicable through the medium of a public Journal, must be appreciated by every individual who values the profession, or aspires to advance the cause of humanity. At the present time, improvements in the healing art, are as regular and progressive as the evolutions of the planetary system, and the labours in the *one*, are no less objects of regard, than the magnitude and sublimity of the *other*. However small the modicum in the dissemination of facts, yet, when multiplied, their aggregation may amount to something beyond ordinary consideration; and he who brings his offering to the shrine of Medical science, alike the dispensations of the poor man, should be kindly received and considered as acceptable, as the more bountiful gifts of the rich in medical lore. With these impressions, I offer to your consideration the following case, briefly drawn up, and intended, should any anomalous points therein contained be deemed worthy publicity, you will give them a place in your Journal.

Diseases of the Antrum Maxillare, have ever been considered as tedious in treatment and procrastinating in cure.—Tumors arising either within this cavity, or adjacent thereto, may be timely removed, with a loss of bony substance, and operations have been performed when fungous excrescences of considerable size, have been extirpated. Yet, when this part is subjected to abscess, notwithstanding an early and convenient opening be made for the exit of purulent matter, and such cases submitted to the best surgical talents; the disease yields to no remedial means, but proves a source of considerable annoyance to the unfortunate sufferer.

The subject to which I shall particularly refer, is a female of about 12 years of age, who complained in the incipient stage, of a small projection or tumor within the mouth, situated over the palatine bones: on inspection, it was found soft and containing pus; an opening was made which discharged freely. Some detergent application was recommended, and the patient left to the management of the attendants, with the usual directions, in relation to attention to the state of the system, &c.

About ten days after, I was called to see the patient, who presented to the first glance on the countenance, considerable tumefaction about the left side of the face, extending around the orbit of the eye, and so including the lids, as to occasion their closure. The presence of some stupor, and vertiginous affection of the head, which, either from determination of blood to that part, or increased inflammatory action, influenced me to the resort of depleting and antiphlogistic means. The inflammation unyielding to the discussing treatment, and finding the part below the inner canthus somewhat projecting with evident fluctuation, I ordered a soft bread and milk poultice. After the lapse of a few hours, an opening was made which gave vent to about one ounce of matter. From this time, a discharge was gradually produced, and on inspecting the mouth, I perceived the incision made at its roof, was a channel for offensive pus, although the inflammatory action had abated in some degree, yet there was a pointing and evident appearance of accumulation about the external angle of the eye, and extending immediately over the *os malæ*. My patient now laboured under much febrile excitement, accompanied with a profuse and foetid discharge. From the last external opening, I perceived an exfoliation about to take place, and on enlarging the orifice, which became necessary, the whole of the *os malæ* protruded and was thrown off, with the entire portion that assists in forming the base of the orbit of the eye. Pieces of bone, were thrown out daily from the orifice near the inner canthus, as also from the nostril of the same side, which when collected together, filled the palm of the hand. I was convinced, the disease extended to the partition of the antrum above the alveolar processes of the superior maxillary bone of that side, and my conjectures were confirmed, by removing two of the molar teeth, which formed an exit for other portions. The ravages of the disease, was not yet limited, with the flow of sanious

matter: from the roof of the mouth, all the bone forming the left palatine plates, exfoliated and were removed. The tumefaction subsiding, a constant icorous discharge issued from the orifices, and also from the nose for eight months. A probe introduced through the orifice, made at the external angle of the orbit, could be passed into the mouth, and readily through the opening, made by the removal of the teeth. A seton was inserted following the tract above described; and although this plan of treatment has been reprobated, and its utility impeached, still in this instance it evidently aided in the speedy removal of the caries portions of bone, after it was withdrawn, the discharge continued, attenuated, a strong injection of sulphate of zinc was used, which, being steadily pursued produced a healthy change. The external and internal orifices soon closed, and with the exception of a very inconsiderable discharge from the nostril of the affected side, the patient is well, having a depression about the lower lid, which separates that from the upper, much more considerable than is observed on the opposite side.

This case has been drawn out with the intention of relating the complete removal of the *os malæ*, and its separation at its juncture with other bones at the transverse and zygomatic sutures. The plan of treatment conveys no novelty, but rather strengthens the practice adopted, and recommended by some of our best Surgeons, in similar cases.

Respectfully your obedient servant,

J. DE LA MOTTA.

ART. III.

Case of Peritoneal Inflammation, after confinement terminating in suppuration, by M. C. Mc LORINAN, M. D.

Mrs. A. F. was delivered of her fourth child 29th of Dec. 1824. Her labour was easy, and on the eighth day, she arose and sat up for some hours, when feeling fatigued she went to bed; early the next morning, she experienced a severe chill, which continued for several hours without any reaction. About 10 o'clock, a slight reaction was observed;

at this time she was delirious, her pulse contracted, fluttering and quick, and she was thought by the attendants in articulo, mortis, medical aid could not be obtained, in consequence of which a neighbor came, and took a small quantity of blood from her arm. On the next day, viz. the 10th day, about eight ounces of blood were again taken. This gave her much relief, she became sensible, and requested to be bled more freely, which however was not complied with. She was given ten grains of calomel three times successively, without producing any evacuation, she was next given three wine glass fulls of castor oil at intervals, without producing any effect. Her sister in law, a very intelligent midwife, thought that cloths moistened with a solution of glauber-salts, might have some effect in relieving the soreness of the abdomen, and also assist in producing an evacuation, accordingly it was applied and in fifteen minutes a copious evacuation was obtained, which greatly relieved the tension and pain in the abdomen. Small blisters were afterwards applied over different parts of the abdomen, and bark given to break the fever. This treatment was pursued until the 19th of January, (which was thirteen days from her attack,) when I first saw her.

She then complained of a heaviness in the abdomen, which had troubled her during her sickness, and of costiveness, which had continued, (except when relieved by medicine,) from her first attack. Her fever was always present which increased during the night, accompanied with delirium, I ordered her purgative medicines, and light nourishing diet, and the bark was withdrawn, because it was considered injurious. Her abdomen became always tumid, whenever a free evacuation was not obtained, and the bowels were so torpid, as to require very active cathartics. Her diet continued to be very light; for the least quantity of wine or bark, invariably aggravated the fever, the tenseness and pain of the abdomen still continued, and she has, (some days after seeing her,) complained of a hardness, exactly around the umbilicus. To this part a blister was applied, and in two days after, she consented that I should examine it. On doing so I discovered an evident tumour, pointing outwards through the umbilicus, and could distinctly feel a fluctuation of matter. I made a puncture in consequence, through the umbilicus, when the matter spouted out against the wall which was two yards off. Upwards of two

quarts and a pint of matter came away, of thin yellow and white flakey appearance. This discharge continued for ten days, when it changed to a sanious whey like consistence. Hectic supervened with copious cold clammy sweats and distressing cough, and great emaciation. She was now given bark, cooling regimen, and nourishing diet, she continued slowly to recover for two months and a half, when the parts cicatrised and all the dangerous and distressing Symptoms disappeared. In this case, had she been freely bled in the first instance, and copious evacuations excited, these distressing symptoms would not, I am persuaded, have supervened.*

* We quote the following passage from "Dr. Armstrong's work, on Puerperal fever, of the termination of one case which he had in a similar manner with the above." When from a cautious survey of all the symptoms, there are grounds to believe that the stage of excitement is past or upon the point of declination, every thought of general venesection ought to be abandoned and if any measures can then save the life of the patient, which is indeed most doubtful, laxatives and opiates are by far the most likely, together with light nutritious food, exhibited in small quantities at once. But it must be always recollected whenever a highly inflammatory disease has unimpededly run its course, that the vital organs are generally somewhere wrecked towards its conclusion; so that if it were possible, at that advanced period, to abstract whatever remains of fever may be present, the patient would most frequently die, from the organic mischief previously induced. *Yet now and then a remarkable recovery, does take place from the last stage of the puerperal fever, even when no proper measures had been used in the first. An instance of this kind once fell under my observation, in which an opening took place spontaneously at the navel, after the patient had struggled several days with extreme irritation and exhaustion, and the turbid serum and coagulable flakes effused into the abdomen from inflammation, were evacuated at this opening which finally closed, and the long continued hectic ceasing, the patient got quite well at last —Editors.*

ART. IV.

Letters addressed to the Agricultural Society of South Carolina, on the means of improving the health, of the Lower Country, by JOSEPH JOHNSON, M. D.

Gentlemen—It would be presumption in me to offer any thing to your Society on Agricultural subjects: but as we are all interested in the health and prosperity of the low country, and the members of your Society more deeply than

others, I submit to you the result of my reflections on this, the chief object of my attention.

That this part of the State is more sickly now than formerly, I believe you will all agree; that it may become worse, is ascertained; and on the consequences of this progressive deterioration, we must all look with anxiety and apprehension.

As far as my observation goes, this increase of sickness commenced with the abandonment of the Inland Rice fields, and has advanced in proportion to the number abandoned, and the quantity of high land cleared. By the former an immense increase was occasioned in the quantity of miasmata; by the latter, the most efficient means of purifying the Atmosphere were removed. I confidently hope that the evil may be arrested in its progress, and in a great measure removed by means, within the reach and control of all.

That other countries have been ruined by the gradual deterioration of climate, can be proved by history; and the situation of Italy in particular, may be known from the publications of Sismondi, Chateaubieux and others.—Even where rice is cultivated on the Banks of the Arno and the Po, although sickly, the prevalence of sickness is nothing compared with that in the neglected Sea Coast, and even the *Champagna di Roma*, which was once the garden of Italy. We also know that where countries had been notoriously sickly, they have been rescued from that deplorable situation by proper draining and cultivation. Particular instances of this kind in our own State, must be familiar to you all, and the reverse from neglect or imprudence, is unhappily too true. Many healthy situations have been ruined by inconsiderate clearings—by Mill ponds and Reserves, and again have been restored to health by removing the sources of sickness.

Private interest and individual enterprise alone may effect the improvements contemplated. Where several are interested they must associate, and where all will not do so, legislative aid must be obtained. A planter may turn his attention to his own abandoned rice field, or be annoyed by those of other people. He knows that the soil is of the first quality of blue clay, superior to a great proportion of tide land. He knows that excellent crops have been made from it in favorable seasons. He reads of the system of draining and irrigation practised in China and other parts of Asia. He learns that a very cheap and simple machine may be used to flow

his fields when too dry, and to relieve him when there is an excess of water. He purchases his neighbours property for a trifle and removes the nuisance.* He makes certain and abundant crops, and his success in a few years induces others to follow his example, and the dry culture of such fields becomes general. Give me leave to offer the suggestion of a friend, a man of the first respectability—that flax would probably succeed as well in such grounds as in the low country of Holland. If not exceeding my province I would more particularly recommend that they be allotted to all the purposes of grazing and soiling. By this plan, all occasion for the unwholesome reserves would be obviated and the place for the reserve become the richest part of the field.—The cultivation of Sugar Cane as food for cattle of all kinds both in summer and winter, may be well worth your consideration. It would be a most luxuriant crop in such lands, and the juice when fermented and distilled is said to be more profitable in Georgia than the cultivation of Sea Island Cotton. A few enterprising men may soon improve a neighborhood and enable their families to reside so near their own planting interests, as to superintend and inspect them daily.

If from your own experience, you are satisfied of the great advantages resulting from your residence on your plantations throughout the winter, what must be the additional advantages of such superintendence in the Summer and Autumn—the most interesting and important part of the whole year.

That it is more advantageous to manure and improve an old field than to clear a new one, is insisted on by the most experienced farmers, even in countries where wood is much more valuable than with us and the cost of manure much greater. Independent of the facility with which an immense mass of manure may be collected by alternate strata of marsh grass, stable manure, fennel and other weeds, turf and marsh mud, &c.—the first cost of the land is the most conclusive consideration, for without such collection the planter will require at least twice the quantity of land for a change of fields. By rendering an old field productive, you not only recover so much land actually lost, but save the necessity of holding a greater quantity of land than is required for cultivation and preserve the trees for the advantage of health.

* The deserted Rice fields are the Pontine Marshes of South-Carolina.

Is it not better to manure a field until it yields 30 or 40 bushels or more of corn, to the acre, than to clear a new one, which will not yield more than 15 or 20? Will not the same labour, time and expense effect the former as the latter, except where the wood be readily sent to market? Would not the effectual draining of a great portion of the inland swamps and rice fields, enable them to afford the most abundant crops of corn, hay, &c.? Would not some such system of culture, greatly improve the prospect of health in this part of the State?

To give some idea of the simplicity and effect of a machine for draining fields incommoded by back water, or from any other cause too wet, I send a rough model of one that may be made by any carpenter, from materials always at hand, which will enable each man employed on it to raise about 75 gallons of water per minute *

Besides the draining of such cleared swamps, there are bays and ponds in the neighborhood of every plantation, the draining of which would greatly promote the health of the vicinity. Another fruitful source of disease is the neglected stagnant water in the ditches and canals of the rice fields, after the water has been let off preparatory to harvest. You refresh the water in your fields as often as bubbles and scum, which denote fermentation, are observed to collect; but neglect that in the ditches altogether as soon as the rice is ripe. From the continued warmth of the weather for the space of two months after this period, it is obvious that a vast quantity of stagnant water must be in these ditches, and a proportionate quantity of noxious exhalation be the consequence. The exhalations resulting from rice culture are trifling compared with those from neglect and oversight in leaving stagnant water where there need not be any. The spirited and commendable experiment made by our neighbours of Savannah, has not succeeded quite as well as they merited. With deference I think this is owing to two circumstances; all the neighbouring rice fields are not subjected to dry culture, and they which are so subjected are not perfectly drained. The water stagnating in the drains from May to November, I believe to be the cause of sickness in the vicinity. If they will not construct machinery for throwing off this water, they should at least make it ebb and flow in the ditches with every tide.

* This may be seen at Chisholm and Taylor's counting house.

Give me leave to offer an opinion as to the precautions that may be useful if not necessary to a family about to spend the summer in the country. A residence in villages is not advisable—the distance from your plantation is generally so great as to render your superintendence difficult if not inefficient, and your health is endangered by every change of weather that may overtake you on the way, or that may detain you at the plantation. The dissipation and rivalry that will always arise in such settlements, very soon render them unsuited to health and economy. A suitable place may generally be found within a mile or two of your planting interest, where you may inspect every thing, and obtain your supplies without difficulty or delay. If two or three families would unite in such a plan, it would of course be more agreeable.

In making the choice, a pine ridge free from moss, having a moderate slope, should be preferred; but no such place should be finally adopted until it is ascertained to afford good wholesome clear water. The associates should agree, in writing, not to make a clearing or even cut fire wood within a given distance of the settlement; to provide for making a large fire morning and evening in some central situation for the purpose of rarifying the air, expelling the dampness and consuming the surrounding atmosphere; likewise to keep a certain space around each house clear of grass, weeds and brush, all of which retain much moisture. The chilly, damp night air, the heavy chilling dews in the morning, and the extreme heat of the sun, should be carefully avoided. All such extremes have a great tendency to excite this disease of summer and autumn, especially where the extremities of the body are chilled by being wet with dew, and the sun beaming with intense heat on the head. In such cases a warm bath would have the best effect in equalizing the circulation and heat of the body. No one should ever lie down or sit in wet clothes.

In other countries similarly situated, great attention is paid to diet, and I have no doubt of its advantages. All excess in eating and drinking is forbidden—the food should be abundant, nourishing and simple; the only restrictions generally observed are as to eggs, butter and milk as food.

If any preventive medicine is necessary, it certainly should not be of a debilitating nature; the mild tonics, such as bitters and bark, would be useful, and by many are deemed

necessary. To obviate as far as possible the consequences of occasional exposure to rain, wet feet, and other contingencies of this nature, the best precaution is the daily use of the cold bath on an empty stomach at any time of the day, but particularly in the morning. The most convenient way of applying it probably is, the effusion of a pitcher of cold water over the neck and shoulders.

I forbear to urge the advantages to be derived from a residence near your plantations throughout the year. Economy and superior skill and care will probably enable the planter to make a profit of 8 or 10 per cent, on his capital, whereas 4 is now the utmost that is generally realized. Hoping that these suggestions may be corrected and improved by your practical knowledge and experience,

I am, with much respect,

Your obedient humble servant,

JOSEPH JOHNSON.

To the Agricultural Society of South Carolina.

Gentlemen—The opinions expressed in my communication about a year ago, having been illustrated and confirmed by publications which have since appeared, particularly by the address of Dr. Scriven, to the Corporation of Savannah, and by the article in the Quarterly Review, on Mal'aria; I again address you on the improvement of the Health of the neighbouring Country.

It may be recollected, that I considered the neglected Inland Rice fields, as the Pontine marshes of this State, and urged that they should be drained and cultivated as meadows, for all the purposes of Grazing and Soiling. I likewise recommended as strongly, that Planters should secure for themselves some Summer retreat, as near as possible to their own Plantations, and give some rules for making such selections and for preserving health during a residence there in the sickly season of the year. Some inquiry having been made as to other particulars, I will endeavour to detail as many as may be deemed useful, and show the necessity for early and diligent attention to the subject, from all who own property in the low Country.

In reclaiming the old Rice fields I believe that little more is necessary, than to repair the outer Banks, with large

Trunks sufficiently low, to secure the prompt and complete discharge of water, that may flow into them from the different leads. I believe that the old ditches in their present situation, though not sufficient for Rice culture, would require little or no work, to render them sufficient for meadows. A good spring ditch to intercept the water that would otherwise run into the field and discharge it beyond the Bank, may be found useful. But in such details, your greater experience will be the best guide. By cultivating these very fields, our Predecessors were able to live on their Plantations, throughout the year, raise large families and accumulate fortunes, without the advantages of machinery, and while the price of Rice was only half of what it now affords. Now that their cultivation is discontinued, they are in a much worse situation, than when in the state of nature, the white Population has mostly left the Country, and the owner can no longer visit and superintend his planting Interest, except at the risk of his life. This danger is growing progressively greater, and its consequences more alarming.

As to the choice of a residence, I think it should be either close to where the salt water ebbs and flows, or in some dry situation in the Pine land, as described in my last. In the former case, there must be no Rice field, pond or other low ground in the vicinity, or these must be so drained that no water can remain stagnant in them, not even in the ditches. In both cases the under brush weeds, and grass around must likewise be carefully kept down, for so great is the quantity of moisture or dampness, retained by them, so rapid is their growth and the decay of their foliage on and near the ground, that different places have proved more or less healthy, in different years, in proportion to the attention bestowed on this object.

In my last, I gave an opinion that a healthy situation might generally be found within a mile or two of every man's planting interest. I still think this practicable by opening the natural drains to the neighbouring Bays and other low grounds, or so ditching them, that the water may readily run off. The trees must not be cut down in or near them, but the brush cleared as much as possible.

For the preservation of health, uniformity of residence in one place is highly important; occasional visits to town and vice versa will endanger health, while a residence in either place might secure it. So also in occasionally spend-

ing a night on the plantation or other neighbouring places, instead of sleeping uniformly in the summer residence.*

While I remind you of the very numerous and respectable families that resided in every part of this low country throughout the year, before the Revolution; let me likewise draw your attention to the remaining evidences of the attention paid by these residents, to the draining of the country. You cannot fail to recollect with admiration the very extensive deep ditches still to be seen in all the places then inhabited, and which the neglect for more than half a century, has not been able to deface. You cannot fail to observe the co-incidence of increasing sickness and desertion, in proportion to the neglect of these drains. The old Inhabitants tell us, how very abundant stock of every kind was previous to the Revolution, and at how low a rate it was then sold. It is not to be wondered at, we are surrounded by one of the finest growing countries in the world, and are yet dependant on the neighbouring States for our supplies.

Excuse the anxiety expressed on this subject, the very existence of Charleston depends on the prosperity of the low country, and their interests, have always been proportionate and reciprocal.

I remain Gentlemen,

Your obedient humble servant,

JOSEPH JOHNSON.

CHARLESTON, Feb. 14, 1825.

* By the employment of a private Tutor, your children may be educated with economy and effect, while you retain the immediate care of their health and religious and moral principles.

ART. V.

Case of the derangement of the Spleen and Liver, terminating fatally in vomiting of blood, with Remarks, by THOMAS Y. SIMONS, M. D.

There are no organs of the animal economy more frequently deranged in this country than the Spleen and Liver and the diseases resulting therefrom extend perhaps to as great a degree in the Southern section of the United States.

as in any portion of the earth. It is important then that the pathology of these viscera should be carefully observed, and every contribution given illustrative of their diseased structure. With this view I have thought the following case would not be uninteresting accompanied with some remarks.

Mr. ———, Until the age of 22 had lived in the city, was of robust habit, and had never had a fit of sickness of any importance. Having obtained a planting interest he retired into the country, where he lived all the year, and contracted the intermittent fever, which was relieved in winter, but in summer when again exposed to the exciting cause it was reproduced. It was thus with him for many years, alternately, in the winter relieved and in the summer attacked, a circumstance common to many planters living in the country, throughout the year, and he at length became so familiar to these attacks as to regard them (as a matter of course.) requiring no particular remedies except when very violent, and frequently he would participate in the pleasures of the chase, while labouring under the attack — This course of things had continued for many years, until he was attacked with vomiting of blood, which threatened his life and which it was difficult to arrest. As soon however as he was relieved by the active depleting remedies necessary on such occasions, his appetite became so voracious as not to be controlled and this was always the case on his recovery after every attack, and it was impossible to get him to submit in any degree to diet and regimen; although apparently in the enjoyment of good health, the chylopoetic viscera never performed faithfully their office, in consequence of which he was obliged to take cathartic medicines frequently, to relieve him of oppression and assist the operations of nature. This had continued for many years, nearly every year of which he was attacked with fever and threatened with vomiting of blood. There was in this case always the following indications of disease. His countenance was always pale and sallow, his abdomen enlarged and sensibly so in the region of the spleen, his bowels were never regular, but always either constipated or relaxed, and although as before mentioned his appetite was great, the Chylopoetic viscera never performed their duty and he was always puffed and heavy after meals. His pulse was always full, slow and intermittent, and this he attributed to an anomalous

constitution rather than to a positive deranged state of some viscus. It is remarkable that this gentleman under such circumstances possessed an amiable temper and his company was much sought after and much estimated. Such is a brief history of this case before I attended Mr. ———. Upon being called to him in consequence of the death of his former Physician; I told him as he had previously been told the true cause of his disease; that the spleen was enlarged and the whole intestinal circulation was directed to that viscus, and that it was indispensibly necessary to produce an equilibrium of action in the circulating system. To effect this he was advised to undergo a full alterative treatment, and retire early from the country and travel. He consented, but on getting great relief, he became impatient of the necessary restrictions and resumed his former avocations. Indeed he was so absorbed in his planting interests that nothing could abstract him from it.

Exposing himself thus to the exciting cause the disease again appeared in the summer of 1823. He was extremely sallow with clammy moisture in his skin, which was hot, his tongue furred, and considerable nausea, and irritability of stomach; his pulse was full, strong and intermittent, and there was considerable cerebral excitement; I bled him very freely, until the pulse softened and assumed a more regular action, he was then given calomel and rhubarb, and afterwards snake-root and salts, when he passed immense quantities of dark grumous putrid blood resembling very much the black vomit, but differed in giving a purplish hue to white paper dipped in it, with this there was not the slightest portion of bile intermixed. When this blood had passed I could feel a sensible diminution in the region of the spleen. He was subjected to an alterative course, and a large blister applied to the left Hypochondriac and epigastrie regions, he gradually recovered, but never to as great a degree as in his former attacks; he went about however and indulged his appetite. This continued until October, when he complained to me of feeling heavy, and having spit up some blood, I advised him instantaneously to be bled, he declined however until the evening, as he had some business to transact, in pursuing his business he unfortunately took some salts in soda water. He felt so unwell he returned home, the medicine commenced to operate, when he passed up and down an immense quantity of blood. I was immediately sent for,

On arriving I found him speechless and completely exhausted, the vessels collapsed and a cold clammy perspiration all over the surface. I endeavoured to bring on a reaction, and then by bleeding to abstract the circulation from its fatal direction, a slight reaction took place, but on opening a vein a few drops of blood only escaped, and a collapse immediately succeeded. He was again seized with vomiting, and the blood spouted out of his mouth, in a gush to the amount of a half gallon, every means was used to check this determination, but with no effect, and he died the next morning, having vomited and passed by stool several gallons of blood.

Post Mortem, examination. On opening the abdomen the whole of the intestines and mesentery were pale and colourless, but no deviation from a natural state. The spleen was very much enlarged, extending as low as the left Iliac region, and occupying almost the whole of the left cavity of the abdomen, it was flaccid in consequence of the great quantity of blood which had come from it. The splenic arteries and veins were much enlarged, as well as those of the stomach, and particularly the vasa brevia.

The liver was almost completely covered by the omentum and intestines protruded to the right cavity by the enlarged spleen; it was contracted not larger than a good sized kidney, and its Acini were much obliterated. The kidneys were rather larger than common. There were no other parts materially changed.

In this case, the whole of the intestinal circulation had been directed to the spleen, and the portal circulation thus diminished, and consequently a deficiency of biliary secretion, to carry on digestion faithfully. Hence the constant irregularity in the action of the alimentary canal, and the alternate laxity and constipation. Cases of direction of the intestinal circulation to the spleen is well known to be the consequence of the frequent recurrence of Intermittent fever, as a similar direction to an enlarged and diseased liver is the consequence of frequent recurrence of Bilious remittent fever, and it is important in chronic affections of this kind to ascertain whether the patient has been affected previously with intermittent or remittent fever, as in the one the increased circulating action will be to the spleen in the other, to the liver.

In this country, intersected with immense bodies of swamp lands, and reserves of water kept back for the culture of

rice, all who are exposed to the miasma, arising from these sources, are victims of remittent and intermittent fevers, and their sequelae diseased liver and spleen. Few persons who constantly live, in such an atmosphere have a sound liver and spleen, and it is much to be regretted that the great proportion of the lower part of our state is thus situated. It is somewhat singular that this state of things is confined to the white population. While the white man is seen shivering with ague, his countenance cadaverous, and his temper splenetic.—The black, is fat plump and glossy, in the full enjoyment of health, and vigor.

The great desideratum is not the cure, (because this is impossible as long as the patients are again exposed to the exciting cause, and this must be the case unless in the summer, there be a total abandonment of the lower country,) but the preventive, and it would be a signal act of patriotism (and certainly deserving of the most profound attention,) to point out a practical means by which portions of our lower country, contiguous to our planting interests, might be made exempt of that deleterious poison, which is so generally diffused. I must apologize for this digression and beg leave to offer a few remarks, regarding the treatment of Chronic affections of the Spleen and Liver.

Our first step must be to remove our patients to a purer atmosphere, and subject them to a complete alterative treatment. Their diet should be extremely light, and whatever they take should be in small quantities, that there might be as little stimulus, and excitement of the chylopoetic viscera, as possible, for in these affections it must be kept in mind, there is an undue balance in the intestinal circulation, and any great quantity of food, thrown into the stomach in this state of things, would prove hurtful, by requiring a greater action of the digestive functions than they are capable of performing. I am thus particular on this point, and beg leave to impress strongly the absolute necessity of attending strictly to diet in these cases, because the greater number of failures of cure, arise from this neglect. It must be within the experience of most practitioners, of patients complaining of indigestion and deranged liver, and yet indulging in rich luxuriant food, and stimulating wines, thus pursuing the best possible method of perpetuating and increasing their disease.

In place of Calomel, and the blue pill, which are such popular remedies, (and in very many cases justly so,) I would

prefer a combination of tartar, aloes and rhubarb, in sufficient quantity, to obtain several passages every day; in those with torpor of the liver, large doses will be required, and these must be continued until the blue plough-mud like evacuations become yellow, evincing the presence of bile. I had a case of a gentleman who had suffered from a torpor of the liver, connected with symptomatic fever, and great torpor of the alimentary canal; large divided doses of the above combination were given him, so as to excite nausea, and sometimes vomiting, with five or six evacuations for three weeks, when they became yellow, evincing the action of the Secretory vessels of the liver, after which the doses became lessened until their was sufficient natural tone in the liver and intestines to perform their offices unassisted.

As regards local action, the tartar emetic ointment as has been recommended by some British writers, and particularly the celebrated Jenner, in a variety of affections, is in my opinion preferable to blisters. It should be rubbed all over the region, of the spleen, liver and stomach, until thick crops of small pustules come out

All Tinctures should be avoided, and infusions of bitter substances, substituted, and the patient as far as possible, should take gentle and regular exercise.

These are my ideas of the treatment of this disease, and it would afford me much pleasure to receive the opinions of those of more enlarged experience and observation.

ART. VI.

An Essay on the Circulation of the Blood, by E. GEDDINGS, M. D. Member of the South Carolina Medical Society, and President of the Charleston Medical Society of Emulation.

At dixi fluere hunc lutulentum, sæpe ferentem Plura quidem tollenda relinquendis.—
HOR.

It has always been a source of regret and mortification to the cultivators of medical Science, that it should, in many respects, be so overwhelmed with doubt and uncertainty, as to preclude the possibility of arriving at any thing like fixed and established principles. This apparent fluctuation and instability of character has, indeed, been so great, on many occasions, as to induce some persons, in a spirit of detraction, to deny its claim to the exalted rank of a science. From a superficial consideration of the subject we, perhaps, might be disposed to admit the justness of this degradation of the Healing Art, but when we come to make a scrupulous examination of the various and diversified subjects, which it embraces in its unlimited grasp, we cannot, but be struck with wonder and admiration at the very character of a number of its parts.

In a science embracing such a vast multiplicity of abstruse and intricate subjects for consideration there must, of necessity, be a variety of circumstances, which will bid defiance to the scrupulous exactitude of Mathematical demonstration, I think, therefore, that the doubt and obscurity which exists upon many subjects of medical and Physiological inquiry, may, more justly, be attributed to the inability of the mind of man to unravel the difficulty of the subject of investigation, than to any deficiency it may possess, in point of stability of character.

The mind of man is so constituted by nature, as to be impatient of the rigid restrictions of Philosophical investigation; wearied and disgusted with the devious and intricate march and truth, he at once throws off the trammels of Patient research, by which, alone, his deductions can be just and le-

gitimate, and in the ardour of his misguided inquiries, fabricates some flimsy hypothesis, upon which he builds up a frail and tottering superstructure, and ornaments it with every taudry and extraneous decoration, that can please the fancy or dazzle the imagination. Thus gorgeously decorated with all that creative fancy can invent, it may by the imposing glitter of its exterior, win over a few solitary votaries, who, under the influence of a kind of superstitious reverence, abjure the restrictions of judgment, and make at its shrine, a voluntary offering of their assistance to perpetuate its existence. But destined in the hour of its earliest creation to an ephemeral existence, it is speedily forsaken by its warmest supporters, the heat of their enthusiasm, quickly abating some bold innovator proclaims his independence, subverts the fabric of his predecessors, and erects on its very ruins a new edifice, equally destitute of all validity of structure.

It is to causes, such as these, which have ever tended to clog the wheels of every department of Science, that we are to attribute the rise, and downfall, the growth and decay of the innumerable systems and wild speculations, with which Physiology has been deluged, since the earliest period of its existence as a science; men, instead of confining themselves to a deduction from known and established principles, which is the only legitimate mode of Philosophising, have suffered themselves to be led by a blind enthusiasm into the grossest and most unpardonable absurdities. We constantly evince in our researches after truth a tendency to deviate from the proper course, and instead of circumscribing our labours to the investigation of facts, and deducing from thence our opinions and practice, we are always prone to enquire into first causes, till in the ardour of our pursuit we lose sight of truth and reason, and become entangled in a Labrynth of difficulties, to escape from which, it is necessary to sap the very foundation of sound Philosophy.

We have in the innumerable speculations, and fruitless enquiries, into the nature of the vital principle, an instance, which places in the most conspicuous view, the complete futility of such idle pursuits. This is indeed, a theme, that has exercised and engaged the attention of Philosophers in all ages, without advancing us a single pace nearer a knowledge of its nature, than we were two thousand years ago, instead, therefore, of wandering in search of subtleties, too refined for the human intellect, we should direct our attention to the Phenomena

of nature, and the unerring laws by which they are influenced. It is this, and this alone, can give an unvarying character to our conclusions, and an imperishable treasure to science.

In entering upon the object of our enquiry these reflections naturally arise, since no subject, within the whole range of the Physiological sciences, has given rise to such a mass of vague and contradictory opinions, as the circulation of the blood. Occupying as it does a most conspicuous rank in most of the Phenomena of life, it is somewhat remarkable, that it should have so long eluded the observation of Physiologists. If we direct our attention to the earliest records of the healing art, we shall find all the Physicians, who lived even in this infancy of science, evincing some indistinct and imperfect views, of this important function. We shall find, however, in their speculations on this subject, little else than a huge mass of crude and undigested absurdities. so that when we are met by an occasional gleam of truth, it is so wrapped up in the mystic darkness of the age; as to preclude the possibility of rescuing it from the thralldom in which it is involved.

Commencing our observations with Hippocrates, the great Father of Physic, we shall find that he had some conception of the pulmonary, or what we denominate the *lesser* circulation. Possessed of a knowledge of this important fact, with his powers of close examination, it is a little singular, that so important a Phenomenon as the circulation of the blood, should escape his researches. But the Philosophers of that age were too much in the habit of deviating from an attentive examination of facts as they occur in nature, in pursuit of analogies, which were preposterous in themselves, and altogether foreign to the subject of Investigation. In explication of many of the Phenomena of vitality, they were in the habit of introducing things which had no analogy in reason or nature.

Thus exposed to erroneous conclusions on every side, we cannot be surprised to see them straying occasionally from the path of truth, and loosing themselves in the mazes of conjecture. We shall accordingly find, from a perusal of their works, much to commend, yet shall often see them allured into error by false analogy, and loosing sight of truth altogether, indulge in the most wild and visionary speculations. Thus they supposed that the blood was conveyed by

the veins to every part of the system, from whence it returned again through the same vessels to the heart: that it passed out during the day, and returned again at night. They even went so far, as to compare the motion of the blood to the ebbing and flowing of the tides of Eripos.

They supposed that the chyle, after being absorbed by the mesenteric veins, was conveyed by them to the liver, in which it was submitted to a depurative process, preparatory to its admixture with the whole mass of blood. The lungs, according to their mistaken views, performed the office of ventilators, moderating the heat of the heart, which they supposed was generated by the violent agitation and friction of the blood.

Previous to the time of Erasistratus, we had no set of vessels, denominated arteries in contradistinction to veins.— But so soon as this Philosopher framed his visionary Hypothesis of the existence of a distinct set of vessels, destined exclusively to carry the animal spirits, the name of Artery was immediately transferred from the Trachea, to which it had been affixed by Hippocrates, and appropriated to these vessels. Hippocrates, and indeed all the Physicians of his time, had a distinct conception of the existence of the vessels, which we denominate Arteries, but they were by them called veins, and in consequence of their violent pulsation, Hippocrates calls the carotids the leaping veins of the neck.

From the circumstance of the arteries being always found empty after death, they supposed that they were destined exclusively for the movement of the animal spirits, which they imagined existed in the left ventricle of the heart; hence they maintained, that the violent leapings and contortions of the arteries, were owing to an effort of the spirits to escape from their place of incarceration.

After the time of Erasistratus the minds of men became so tinctured with the wild enthusiasm of that Philosopher, that loosing sight of things, as they really existed, they compelled every thing to bow in submissive obedience to the bloated chimeras of their master: instead of describing things in conformity to nature, they usurped the very land marks of truth, and substituted the most visionary speculations for plain and legitimate deductions from fact. Being intoxicated by the animal spirits, which existed only in the recesses of their own distempered imaginations, they maintained that arteries, alone, came out from the left, and veins from

the right side of the heart ; and although they were sensible that the pulmonary artery was the same in structure as the Aorta which they denominated, *Arteria Magna*, yet to make every thing conform to their mistaken views, they called it *Arteria Venosa* ; and to the pulmonary veins, though possessing all the distinctive attributes of veins, they applied the name of *Venæ Arteriosa*.

It was in consequence of this theory, that the right ventricle of the heart was called *ventriculus sanguineus*, while that of the left was denominated *ventriculus spirituosus*. Not having any distinct conception of a circulatory motion of the blood, they supposed that this fluid moved straight forward in the veins, and returned again through the same vessels.

But after a while, from seeing the difference which existed between the blood discharged from wounded arteries, and veins they conceived the necessity of mixing the blood, which existed in the right side of the heart with the air and animal spirits, which they supposed to exist in the left. They were, however, soon able to extricate themselves from this difficulty, for they often found, or pretended to find, a communication between the two sides of the heart, by a small portion of the foramen ovale remaining open. This, they conceived, afforded a ready solution of the question.

Haller, evincing his usual scepticism on this subject declares that when they were at any loss for these foramina, "*Solebant foramina Parare adigendo stylos Argenteos in resistens septam.*" But notwithstanding they may have often found these openings wanting, yet, I am disposed to think, that had Haller himself, examined the subject with his usual critical acumen, he would have found them in many instances. That they exist occasionally, I am satisfied from my own repeated examination. To this point we have the concurrent testimony of Bartholin, Marichetti, Mollinetus, Monichen, Broadbecquous, Soæmering, Godon, and, indeed, a majority of the more modern French and German continental writers on Anatomy and Physiology.

To what purpose this opening may be subservient in the economy of the circulation I am entirely ignorant, nor do I believe it to be a matter of much consequence, since it most certainly cannot answer the purpose which was supposed by some of the older Anatomists. My only motive for speaking of it in this place, is, that it is an Anatomical fact, which appears to have escaped the attention of the Anatomists of

great Britain and America, with the exception of the late Dr. Gordon of Edinburgh, I am not acquainted with a single British Anatomist, who has even mentioned it.

An opinion was about this time propagated and generally received throughout nearly all Europe, that one portion of the blood passed through these pores in the septum of the heart, to mingle with the Animal spirits, while the other portion went through the Pulmonary Artery to nourish the lungs.

They believed that the gross impure blood, which was found in the liver, was unfit for the purposes of life, but that after being exposed to an admixture with the Animal spirits, it underwent some change, which fitted it for the nourishment and growth of the body.

This Theory was warmly supported by Riolanus, the contemporary and enemy of Harvey, who presumed to oppose this flimsy offspring of his visionary intellect against the luminous discovery of that immortal man, which was destined to enroll his name upon the imperishable pillar of Fame.

In the works of Galen, accustomed, as he was, to copy after Hippocrates, we find little else than an exposition of the opinions of his master on the subject of the circulation. He also appears to have had some conception of the Pulmonary circulation, though this has generally been supposed to be a discovery of more recent date.

From his always discovering the right auricle of the heart distended with blood immediately after the death of the animal, and frequently observing this portion of the heart palpitating violently under the stimulating influence of the blood. He supposed it to be endowed with a superior degree of vitality, which it did not render up, until life was completely extinct in every other part of the body; Hence he called the right auricle the "*ultimum moriens*," from the circumstance that it continued to act, after all the other parts were, to every appearance, dead.

As we descend from Galen, down to the time of Harvey, we shall find little more, than a repetition of the same puerile conjectures, which served to engross the minds of Philosophers for nearly two thousand years. We shall, indeed, meet with a few obscure hints, which would induce us to suppose, that they were not entirely ignorant of the true course of the blood, but on a critical examination, we shall generally find, that they have reference to the lesser circulation, which, as we have seen, was known to Hippocrates.

As we approach the Epoch of the grand discovery of Harvey, we shall find the opinions becoming more, and more intelligible. Vesalius has described the Pulmonary circulation, but his pupil Columbus, a few years afterwards, attempted to disrobe him of this honour, and vaunted it abroad in the most ostentatious, and ridiculous manner, as a discovery of his own.

About the same time Servetus, Cesalpinus, Sarpi and a number of other Physiologists, evinced some indistinct notion of the circulation, by some allusions to the circular motion of the blood, which are to be found in various parts of their works. But long before this Epoch we find Paulus of Egineta holding such forcible language on the subject, as would induce us to suppose, that if he did not really understand the true course of the blood, he at least, made a nearer approach to a knowledge of this fact, than any man, previous to the time of Harvey. In the part of his book in which he speaks of the pulse he says “*Hæ Arteriæ vero oblonga sunt vasa velut vence, et duas tunicas habent, tunc propter relatum motum, Tunc quod sanguinem et spiritum continent: et enascuntur ex corde, et disparguntur per omnes corporis partes.**” From this it would, at least, appear that he was aware, that the arteries were destined to convey blood, though he might have been ignorant of the course which it pursued, or the nature of the connection between these vessels, and the veins.

Medical Science was doomed to share the effects of the cloud of ignorance and superstition, which, for so many centuries, obscured the horizon of the literary world. Connected, as it is, more or less, with almost every department of knowledge, it was compelled to share in the general wreck, which razed the Temple of Science to its very foundation, and threatened an annihilation of every vestige of learning from the earth.

Springing up in the genial clime of the East, where the minds of men appeared to be endowed by nature, with that intellectual supremacy, which is calculated to surmount all difficulties, it was cultivated with the most indefatigable zeal and assiduity, and flourished with a success commensurate with that perfection of the arts and sciences, which has stamped an unfading character upon the Grecian name.—But at the very moment when the different departments of

* De Pulsibus Cap. XII.

knowledge, like the happy Governments under which they flourished, had attained to the highest pitch of excellence : when the nations of this happy clime were revelling in the very zenith of their glory, a portentous storm was gathering in the North, which was soon to burst upon their heads, and crush every thing in its ruthless and infuriate course.

The nations, of the North of Europe, the wild and barbarous Vandals and Goths, growing impatient of the yoke which had been imposed upon them by their masters, the Romans ; and fired with the prospect of spoil, which these countries, at this time, presented, rushed down from the mountains in hordes, and compelled every thing before them to yield in submissive obedience to their desolating course. The rich and fertile plains were laid waste, the temples profaned and plundered, Schools annihilated, Libraries ransacked and burnt ; and, indeed, it appeared, as though they had been under the direction of some minister of destruction, and were determined upon an entire obliteration of every trace of learning and civilization.

From this time all Europe was involved in one general cloud of ignorance. The torch of Bigotry was inflamed at the shrine of superstition, and the iron rod of persecution was plied with an unsparing hand upon those, who had the temerity to abjure their allegiance to the absurdities which ignorance had consecrated, and think for themselves. It is ever thus, when ignorance and superstition hold the reigns of Empire, absurdities are propagated and enforced, with a kind of cabalistic obscurity, which is calculated to impress on the mind of credulity the belief, that they are possessed of the infallibility of oracles, emanating directly from the Deity.

Centuries thus rolled on, Science still reposing in this midnight of the human intellect, unable to emerge from the thralldom in which it had been so long slumbering. After a while, however, the *torch* of reason again *blazed* forth, with renovated brightness, and Philosophy bursting from the shackles in which it had been so long bound, imposed quite a different aspect upon the face of science. Discovering the complete futility of many of the doctrines of the Ancients, the Physicians of the age shook off their Allegiance to Hippocrates and Galen, and applied themselves to a patient investigation of things, as they really existed, instead of the refined subtleties, which were the creation of fancy.

It was from patient research, and unwearied investigation of this kind, resulted one of the most important and grand discoveries, that ever decked the annals of any age or country. The great and immortal Harvey, guided by the light of reason, and assisted by his own superior powers of intellect, produced to the world a fact, which not only imparted an everlasting celebrity to the age, in which he lived, but has enstamped upon his name a signet of glory, which will endure, with untarnished lustre, until the remotest posterity.

From an examination into the effects of Ligatures upon the vessels, the disposition of their valves, &c. he demonstrated, that the blood, instead of flowing backwards and forwards in the veins, as had been the belief previous to his time, pursued a circular movement, that it was impelled by the left ventricle of the heart through the Arteries, to every part of the system, from whence it returned again to the right side, by the veins; and passing through the lungs, it was again discharged by the Pulmonary veins into the left ventricle, where it was again submitted to the same mechanism.

This plain and simple doctrine of Harvey, when it was first announced, had to encounter the most violent opposition and ridicule. The proofs, however, which were adduced in its support, were so numerous and forcible, that it soon triumphed over all opposition, and having obtained the assent of Physiologists in all countries, it now remains a towering monument, unshaken by the Revolutions of False Theory, or the sophistications of Philosophy.

He maintained, that the motive powers of the circulation resided exclusively in the heart, which, from this circumstance, he denominated "*Fundamentum Vitæ, Princeps omnium*," The arteries and veins, he conceived, were mere elastic tubes, destined to convey the blood, without exercising any agency in its propulsion. This opinion was generally received and accredited in the schools, for a length of time, and even at the present day, has numerous and respectable supporters. It is not our intention, however, at present, to enter into an examination of the validity of this Hypothesis. After an attentive consideration of the functions and mechanism of the different parts concerned in the circulation, we shall be better prepared to appreciate the intrinsic merits of the various opinions, which have been advanced on the subject.

Physiologists have pursued different plans in their investigation of the phenomena of the circulation. It has, however, been most usual to commence with a consideration of the heart and its appendages, and from thence, pursuing the blood through the Arteries and Veins, to investigate the different parts, which are implicated in the function. Bichat has, however, in his description of the circulation, pursued a plan, which is entirely new. He makes two independent systems, one of which he calls the system of *red*, the other the system of *black* blood, each system commencing in one capillary system, terminates in the other, and has the heart fixed between, as an agent of impulse. Thus the system of red blood, according to his arrangement, commences in the capillary system of the lungs, and terminates in the general capillary system. The system of black blood, taking its origin from the termination of the other system, ends in the capillaries of the lungs, where the blood is submitted to those changes, by which it is converted from a dark modena red, to a bright vermillion hue.

This arrangement is ingenious, and conforms strictly to the natural Phenomena of the circulation, but, as comporting better with the natural order of the parts, whose agency is concerned, we shall, in our inquiry, commence with a consideration of the heart and its appendages, and proceed to a successive consideration of the parts as they occur.

In conformity to our plan, we shall, therefore, investigate,

- I. The heart and percardium :
- II. The Arteries:
- III. The Veins, and
- IV. The Lymphatics:—

We are aware, that it may be objected to the latter part of our arrangement, that the Lymphatics being destined, exclusively, to perform the office of absorption, they cannot be considered as performing any part in the circulation. But believing, as we do, with Magendie, that the veins are the principle instruments of absorption, and, that if the Lymphatics do perform this office, it is not their peculiar and exclusive province, we do not hesitate to rank them amongst the organs of circulation. As we shall, however, have occasion to state our reasons more fully for pursuing this course when we come to the consideration of that part of the subject, we shall say no more at present.

The heart is a very strong hollow muscle, situated in the cavity of the Thorax, between the lungs, and resting on the diaphragm. It is surrounded, on every side, by a dense fibrous membrane, called Pericardium, by which it is confined in its situation, and retained in contact with the diaphragm. This membrane is also lined with a very delicate serous membrane, which is reflected over the heart itself, adhering to its surface, and is analagous in its nature to the other serous membranes : as the Pleura and peritoneum ; its office being to lubricate, and moisten the parieties of the heart. This peculiar fluid is denominated liquor, pericardii, and in a state of health is small in quantity, but it frequently happens, from disease of the heart or some of the neighbouring parts, that it accumulates in an unusual quantity, producing dropsy of the pericardium, attended with a long train of obscure and distressing symptoms.

That the principle office of the pericardium is to retain the heart in its proper position is obvious, from the following fact ; If we remove the sternum, and make an incision in the membrane, the heart will often leap from its situation and fall upon the right or left side of the Thorax. "And hence," says an ingenious modern author : "The common and colloqueal expression, derived from the common feeling, of the heart leaping for joy, and it might as well be said for grief and terror, is founded on actual fact.*

Haller, deeming the agency of this membrane so important, supposed that it could never be wanting, but as we have cases, in which the heart itself is absent, so we, also, have well authenticated instances of the deficiency of the pericardium. Two cases of this kind are on record, one by M. Litre, † and the other by Dr. Mathew Baillie. ‡

The heart in man and the more perfect Animals is double, or consists of an auricle and ventricle for the pulmonary circulation, and an auricle and ventricle for the systemic, or greater circulation. From these different cavities all the vessels go out, which send the blood to the different parts of the system, and return it again to the heart. Opening into the right auricle, we have three large veins : the two cavas, and the great coronary, which return the whole of the blood

* Good's study of Medicine, vol. 2 page 7.

† Hist d'acad des sciences 1782.

‡ Transactions of a Society for the improvement of medical knowledge, vol. 3, p. 90.

after it has circulated throughout the system to the heart. From the right ventricle arises the pulmonary artery, which conveys the blood to the lungs, from whence, after it has been decarbonized, it is carried to the left auricle by four large pulmonary veins. The auricle discharges it into the left ventricle, from which arises the large artery of the system, denominated aorta, by which the whole of the blood, destined for the nourishment, support and growth of the body, is circulated.

If we descend, however, in the scale of animated nature, we shall find an apparatus much less complex. In the fishes, and some of the amphibæ, we find only a single auricle and ventricle, and in the turtle, and some others, we shall find the heart made up of a different arrangement. In these there are three ventricles, all communicating, however, in such a manner, as to form one large common cavity. Descending still lower, we shall find no heart, either pulmonary or corporeal. This is the case in the vermes and insects, * and a number of the inferior order of animals, yet the circulation is carried on as perfectly as in man.

The auricle and ventricle of each system communicate by a considerable opening in their septum, which has been denominated, *ostium ventriculorum*, and each of these openings is provided with a peculiar valvular arrangement, which is placed in the cavities of the ventricles, in such a manner, as to prevent the blood from flowing back into the auricles during the systole of the ventricles. These valves are formed by a peculiar folding of the thin delicate membrane, which lines the whole internal surface of the heart. They have been named, from some fancied resemblance, which they were supposed to have to certain objects: the one between the right auricle and ventricle, consisting of three portions, which were supposed to resemble a spear in shape, has been called *Tricuspides*, whilst that in the left, consisting of two portions, was supposed to resemble the mitre, hence the name of *mitralis* has been applied to it.

The mouths of the two great arteries are also provided with a similar arrangement, formed by a folding of the lining membrane of the artery. They have been denominated from their shape *semilunares*, or *sigmoides*, and are made up of three segments, which, when properly adjusted, close

* Bloominbach's comparative Anat. p. 247. Cuvier's Lescons l. 23, Sect. 2, A. 4.

up completely the openings of the arteries, and prevent the retrograde motion of the blood, during the dyastole of the ventricles.

The vena cava Ascendens, and the great coronary are likewise guarded with a fold of the inner membrane of the heart, forming a kind of imperfect valve. The valve of the coronary is so perfect, as to prevent the passage of the blood from the auricle into the vein during its contraction. But with respect to the precise office of the Eustachian valve, which is placed at the entrance of the cava, Physiologists are not agreed. Sabatier* and some other Physiologists, restricting the office of this valve to the foetal œconomy, have denied, that it is subservient to any useful purpose after birth. The occasional absence, or imperfect development of this valve, which is sometimes met with in the adult subject, would, at first sight, appear to countenance the hypothesis of M. Sabatier. But it must be recollected, that it frequently exists in persons far advanced in years, in as great a state of perfection, as in the foetus. The most perfect specimen of this valve, which I ever saw, was in a very old man, in whom the Arteries were extensively ossified, and the circulatory function was but very imperfectly performed. Cowper has given a description of a fine specimen of this valve, accompanied with an engraving, which was taken from a man 83 years old. It formed a crescent of considerable extent, with a beautiful reticulated edge.

Many Physiologists, in opposition to the theory of Sabatier, have maintained, that the true use of this valve, is to prevent the blood of the superior cava from gravitating upon the column below, and when the auricle contracts, to obviate the retrograde motion of the blood in the cava ascendens. However plausible and ingenious these speculations may at first sight appear, neither of them will bear a scrupulous examination; and notwithstanding all the fruitless controversies on this subject, I fear we shall be compelled to acknowledge our entire ignorance of its true office.

The openings of the superior cava, and the four pulmonary veins, are not provided with valves.

The heart is made up of a peculiar arrangement of dense and very compact fleshy substance, differing, however, very much from common muscularity.† From a careful examina-

† Traite Complet d'Anatome, Tome 4.

* Leop. M. A. Caldaui, Memoir lette nelle Acad. di Padova, 1814, p. 67.

tion of this arrangement, we shall see that it is admirably adapted to that powerful and unceasing action, which it is destined to perform, from the period of the earliest development of the embryo, until tired nature, worn out with the unremitting demands upon her resources, sinks into the calm and quiet repose of death.

No subject, perhaps, has perplexed and baffled the Physiologist more than the extrication of the intimate arrangement of the fibres of the heart. Possessing, as it does, such extensive and unvaried powers of exertion, it demanded, at an early period, a large share of their attention; but notwithstanding they bestowed upon the subject their most indefatigable attention, they have never been able to unravel its intricate and inexplicable structure. Vesalius supposed that the fibres were interlaced in a manner analogous to the texture of a wicker basket; and Ruysch contended, that the whole structure was made up of a peculiar arrangement of minute convoluted vessels.*

The more superficial portion appears to be formed of fasciculi passing in an oblique direction, variously branching out, and interlaced in a most intricate manner. They are disposed in strata, lying upon each other, the different fasciculi sending off cross bands, by which they are connected to others, and finally interlacing very closely in the septum, they at last end in the cartilagenous bands at the basis of the ventricles. But as we proceed in our enquiry, we shall find the structure becoming more and more complex, the nearer we approach the cavities of the heart. This is so much so, indeed, that John Bell says, "When we go down into the substance of the heart, we find its fibres all mixed, crossed, and reticulated in a most surprising manner.†"

The difficulty attendant upon any attempt to extricate these fibres, is, indeed, so great, that Vesalius, Albinus and Haller, after bestowing upon the subject much labour and attention, declare that it is impossible.

In the cavities of the auricles and ventricles, we find a large number of round fleshy bodies, passing across the auricles and ventricles in various directions, and bound together by small tendinous fibrillæ. The former are called the columnæ carnæ, and the latter chordæ tendinæ. They were supposed by Boerhaave, to contribute to a thorough

* Thesaurus Anat. IV. Tab. III. Fig. 1, 2.

† Anatomy Vol. I. p. 338.

admixture of the blood, during its passage through the heart, and Majendie appears inclined to favour this hypothesis ; their most probable use is, however, to strengthen the contraction of the organ.

Lining the whole of the cavities of the heart is a peculiar thin, delicate membrane. It also passes round the fleshy columns forming a complete tunica for those which do not adhere with their sides to the surface of the heart. It has generally been described as a continuation of the same membrane, which lines the veins and arteries, but that it is altogether different, is, I think, obvious, from the fact, that the internal surface of the heart is highly irritable, whereas the cavity of the vessels exhibits no traces of irritability.

The office of the auricles, requiring comparatively but little muscular strength, are in consequence much looser in their texture, and weaker in their conformation than the ventricles, which, having a much more powerful part to perform, are made up of a peculiarly strong arrangement. But much less strength being required to impel the blood into the lungs, than throughout the whole system, the right ventricle is much weaker than the left. The right ventricle has, also, the greatest capacity ; it being able to contain three ounces, while the left can only contain two. The parietes of the left are, however, about three times as strong as the right.*

The substance of the heart is supplied abundantly with blood vessels and nerves. Immediately above the valves of the Aorta two, (and according to Winslow, frequently three) considerable arteries are given off, which ramify through the substance of the heart, and are wholly expended upon this organ. The corresponding veins unite into one common trunk, the great coronary, which as we have seen, discharges its contents into the right auricle. The necessity of this arrangement of the coronary vein exists, from the circumstance that the presence of decarbonized blood in the left ventricle, paralyzes its energies, and finally destroys its irritability altogether. This fact was pointed out by Bichat,† and we see it corroborated in the production of Asphyxia, by the inhalation of carbonic acid gas.

The nerves, which go to the heart, are derived from various sources, though the greater part of them come from the

* Haller Elementa Phys.

† Exp. Sur la Vie et la mort.

medulla spinalis. The first are sent off from the superior cervical ganglion of the sympathetic, which is joined by some from the pharyngeal plexus. It also receives some from the trunk of the intercostal and the middle cervical ganglion. To these are joined some from the phrenics and the recurrent of the eighth pair. Some are also sometimes added from the fifth and lower cervicals, and from the lower cervical ganglion.*

This abundant supply of bloodvessels and nerves contributes much to support the heart in the unceasing exertion to which it is submitted. But there has long been a difference of opinion amongst Physiologists, with respect to the precise influence which these nerves exercise over the action of the heart. Some have contended, that this organ is indebted exclusively to the nervous agency for its power of contraction; while others, and particularly Haller, have asserted, that although the motion of the heart is in some degree due to nervous influence, yet it derives much of its contractility from a power inherent in itself, and which exists independent of any connection with the brain or nervous system. Haller has applied to this principle, the name of irritability or "*vis insita*," in contradistinction to "*vis nervæ*," which is possessed in an eminent degree by the muscles of voluntary motion, but sparingly by the heart, and other muscles not under the influence of the will.

Anatomists inferred that the brain and nerves were the sources from whence the heart received its power of motion, from the circumstance, that if we irritate the eighth pair of nerves, the brain, or spinal marrow, the action of the heart will be augmented; and that it will become languid from a division of these nerves. But the force of this opinion is invalidated by the well known fact, that the integrity of the action of the heart often remains unimpaired in acephalic animals, and in cases where the brain and spinal marrow have received considerable lesion, either of function or structure. The superior degree of force and energy with which the heart acts in the foetus, long before the brain is developed, would militate strongly against the validity of this opinion. Thus Blumenbach informs us, that he saw the heart of a chick beat for twelve hours, in an egg, on the fourth day of incubation.†

† Physiology, Lond. Edit. 61.

* Haller.

Another circumstance, which denies the supreme dominion of the nervous agency, is, that the heart when torn from the chest, continues its mechanism, provided the lungs remain pervious, and respiration is continued.

M. Richerand has, however, inferred, from the experiments of Legallois and others, that the heart is exclusively dependent upon the nerves of the spinal marrow for its contractility, and that Haller was wrong, in imputing to the heart any power inherent in itself.

Legallois destroyed the spinal marrow by means of a stilette introduced in the whole length of the vertebral canal, the motion of the heart ceased immediately, and could only be excited again to feeble, irregular contractions, which were incapable of carrying on the circulation, as was proved by the absence of Hemorrhage, on the amputation of the limb of the animal.

It was for a long time believed, that the motion of the heart was kept up by the influence of the cerebral nerves, but more extensive research and patient investigation has taught us, that the brain exercises no direct influence, over the circulation, and that the only aid afforded by the cerebral nerves, in this process, is through the medium of respiration. The lungs, we know, are freely supplied with nerves from the par vagum or the eighth pair, hence if the medulla oblongata be, by any means, injured, or these nerves be divided, or have their integrity impaired, respiration ceases, and as a consecutive effect, the heart fails to perform its office, and the circulation is quickly suspended. The heart, therefore, seems to derive some indirect influence from the medulla oblongata ; and it is upon this principle that we shall be able to understand how it is, that some acephalic animals have been able to subsist for a length of time after birth in a healthy condition, while others, apparently as perfect in their organization, have perished the moment that they were destined to exchange the foeta for the independent existence. This arises entirely from the circumstance, that in the former case, the medulla oblongata, from which the eighth pair of nerves takes their origin, exists ; and the integrity of respiratory function being unimpaired, the circulation is, of course, performed regularly ; whereas in the second case, these nerves being deficient, under which condition the animal exists very well in the foetal state, since respiration forms no portion of its œconomy, but so soon as it is destined to change

its condition, it must inevitably perish, from the absence of the function of respiration.

The circulation is, indeed, so much under the influence of respiration, that it cannot continue for any length of time after the action of the lungs has been suspended. Cruickshank observed, that on pithing an animal, by dividing the spinal marrow respiration ceased, and the heart continued to circulate black blood for ten or fifteen minutes, after which all action ceased.*

The late very ingenious experiments of M. M. Legallois, Bichat, Dupuytren and Brodie, most incontestably prove, that the brain exercises no control over the motion of the heart further than the function of the lungs is concerned. They observed, that on dividing the nerves of respiration, or cutting off their influence by decapitation, the motion of the lungs ceased immediately, and the contraction of the heart survived but a short time. The struggles of the animal announcing the near approach of the extinction of life, artificial respiration was commenced, and after being continued for a few minutes, the action of the languishing organs was, in some degree, renovated, and the life of the animal protracted for an indefinite length of time.

Mr. Brodie, decapitated animals, and by keeping up artificial respiration, the circulation was continued, attended with the usual changes of colour of the blood in the lungs, but no animal heat was generated, and the secretion of urine was suspended. As soon, however, as the inflation of the lungs was discontinued, the action of the heart languished, and black blood was forced into the systemic ventricle.†

More recently, experiments of a similar kind have been instituted by Dr. Horner of Philadelphia, which resulted in a confirmation of the conclusions of these gentlemen. He infers from the result of his experiments, that the action of the heart is not sustained by any particular portion of the medulla spinalis, but by the whole extent, each section contributing its nervous influence.

In one case the circulation was sustained by the anterior portion of the medulla spinalis; the posterior being destroyed; while in another, it was continued by the agency of the posterior, the anterior being destroyed; and in his second

* Philosophical Transactions, Lond. 1785.

† Medical and Physical Journal.

experiment the circulation was kept up by the extreme cervical and lumbar portions ; the dorsal being demolished.

He deduced from his experiments the conclusion, that to keep up a vigorous circulation, when a portion of the spinal marrow had been destroyed, it is only necessary to curtail its extent, by taking up some of the large vessels ; or, what is somewhat singular, by decapitating the animal. *

Mr. Legallois, † after bestowing upon the subject much labour and attention, arrives at the conclusion, that the source of the motion of the heart is in the spinal marrow, and that the contractile power of the left ventricle diminishes in proportion to the destruction of the medulla spinalis ; and when this is complete, the heart no longer possesses the power of propelling the blood. In reply to the objection which arises from the circumstance, that the motion of the heart continues even after it is completely separated from the body, Mr. Legallois remarks, that these phenomena do not result from the true contractions of the heart, but depend upon its irritability. Before we can admit the justness of these deductions of Mr. Legallois, we must be taught to understand in what the difference between the irritability and contractility of muscular fibres consists. Until then we are forced to conclude, that although the medulla spinalis exercises some sway over the force with which the contractions of the heart are performed, yet it is by no means the exclusive cause of the motion of this organ.

M. M. Dupuytren and Magendie performed a number of experiments, with a view of ascertaining the influence which the Ganglions exercised over the powers of the heart, but their labours proved altogether abortive. They excised the cervical and first thoracic ganglions without being able to observe any direct influence over the circulation. The animals all died, however, from the extent of the wound necessary for their extirpation. ‡

Independent, however, of the nervous agency, the heart is possessed of a power of motion which is inseparable from its intimate organization. That there is a faculty in the heart, which enables it to act responsive to the stimulating influence of the blood, is a fact, which has been observed

* Philadelphia Journal, No. 2, 298

† Exp. Sur La Vie.

‡ Pricis Elementaire Tome 2.

from the earliest antiquity. But the particular source from whence it derives this attribute, is a problem, which has puzzled Physiologists in all ages, and even at the present day, the question is far from being established on fixed and immutable principles. Hippocrates attributed it to the innate fire resident in the heart, Sylvius to a fermentation of the blood, which remained in the auricles and ventricles after each systole; and Descartes, in the true spirit of his Philosophy to an explosion. analagous to that of gun-powder. Stahl ascribed it to the Archæus or soul; Swammerdam and Pitcairn supposed that the heart having no antagonizing muscle required an inferior degree of the vital principle in its motion; Haller said it was owing to the irritability of the heart; Darwin and Blumenbach to the oxygen of the blood,* and John Hunter to the stimulus of necessity, and his "*Materia vitæ diffusa*." Thus we see, from a review of the various researches into this inexplicable subject, we have not been able to obtain a more satisfactory explanation of its nature, than we were in possession of two thousand years ago. In their enquiries into the primary source of this peculiar attribute, Physiologists become entangled in a maze of difficulties from which they could only escape, by substituting a vague and unmeaning term, for a principle, of the nature of which they must forever remain ignorant. But since we are satisfied that such a principle does exist, we should content ourselves with an investigation of its operations, without inquiring into things, which must forever baffle our best directed efforts.

The existence of such a principle in the heart, independent of any influence from, either the cerebral, or spinal nerves, is rendered manifest, by the heart still retaining the ability to act after all this influence has been cut off. Haller was enabled to prolong the action of any particular portion of the heart at pleasure, by admitting its natural stimulus, the blood, to the part which he wished to excite to contraction: and in morebund animals, the motion of the heart continues after being completely isolated from the body.†

In its degree of irritability and permanence of action, the heart surpasses all other organs of the body, with the exception, perhaps, of the tongue, which Mr. Blumenbach has lately discovered to possess this principle in a superior degree to even the heart itself. In the chick it is one of the first

* Societ sic Gætting, Tome 1.

† Tran. Societ, Scient, Gætting.

parts developed, and is endowed with powers, which far exceed those of any other viscus in proportion. At this early period of its existence, it enjoys a more extensive and vigorous power of action, unaided either by the brain or nerves, than at any future period of life.

If we examine the heart of the chick during the very first days of its developement, before the parts have yet become distinct, we shall find it pre-emminently irritable, moving briskly on the application of the slightest degree of irritating power ; even the slightest change of temperature, or the most trifling breath of air will influence its motion.

And in animals which have been dead for a number of hours, we can excite the heart into quick and rapid contractions, by inflation, by the application of stimuli, or even by a moderate degree of heat or moisture. This property of irritability is enjoyed in very different degrees by the different parts of the animal œconomy : in some of the parts we are scarcely able, by our most minute researches, to detect even the slightest indications of its existence, while in others, and in particular in many of the parts of the system of organic life, as the heart and stomach, it exists in a preeminent degree.

It is, however, in the hearts of the amphibiae, and some of the inferior order of animals, that we have the most obvious manifestations of a great supply of this principle. The hearts of frogs which have been separated from the body until they have become dry and shriveled, may again have their contractility awakened, by immersion in warm water. Dr. Gardener informs us, that having neglected the heart of a turtle in his handkerchief, with which he had been experimenting, until it was completely shriveled and dry, he was able to restore its power of contraction, by soaking it in a little tepid water, until its pliability was renewed.

The internal surface of the heart is endowed with a much greater degree of irritability than the external. Long after the external part has refused to be obedient to the action of stimuli, the internal may be aroused to rapid contraction by irritating, or picking it ; by the application of blood, or inflating it with little air.

Immediately after the discovery of the circulation of the blood, the heart being looked upon as the only moving power in the circulation, various attempts were made by Physiologists to compute the force of its contractions. These

estimates, as might be expected, differed materially according to the various plans pursued in the enquiry. Borelli computes the power of the heart as equivalent to one hundred and eighty thousand pounds, while Haller estimated it at about fifty-one pounds five ounces, and Keil, barely eight ounces. Nothing can be more contradictory than these different, and opposite statements; and they clearly evince the impracticability of making a correct computation of this power.

A number of experiments have likewise been instituted, with a view of ascertaining the force of the left ventricle, by observing the extent, to which the blood was propelled from one of the principal arteries, when divided near the heart. Dr. Hales* saw a stream projected seven and a half feet from the carotid; and Blumenbach, five feet from the same vessel in an adult subject.† It must, however, be manifest, that no correct deductions can be made from experiments, which are based upon such equivocal data, since the experiment must be influenced by a variety of circumstances, over which we can exercise no control. Besides the strength of the ventricle must vary much in different individuals, and in the same individual, in different states of health and disease. Thus, in a person worn down and exhausted, by the pangs of disease, the influence of long protracted fatigue, impure air, pernicious diet, &c. the powers of the heart will of course, be infinitely weaker, than in an individual nerved with full health and vigour.

Physiologists are not agreed with respect to the precise condition of the heart, which follows its systole. Haller affirms, that the auricles and ventricles are in a passive condition, and that they are dilated by the influx of the blood from the veins. He contends, that the heart can have no dilating fibres, from the very nature of its structure: the principal fibres being, according to him, bound together by cross bands, which connect the whole substance of the heart in such a manner, as to preclude the possibility of any distinct set of these fibres acting separately.

This opinion has generally been accredited, but there are a number of Physiologists who maintain the converse of the proposition, and affirm, that the dyastole is as truly and essentially an active phenomenon, as the systole itself. John

* Statistical Experiments.

† Physiology.

Hunter supposes, that all muscles may be placed in three different conditions : a state of contraction ; a state of elongation ; and an intermediate state, which he denominates its passive condition, or state of relaxation. Hence, he affirms, that the power of contraction and elongation, exercise a kind of antagonising influence, and that so soon as the contraction, or decurtation of the fibres of the heart ceases, their elongation ensues, and that it is upon this, that the dilatation, or dyastole of the heart depends.

Notwithstanding this explanation of Mr. Hunter's is so vague and unintelligible, it by no means follows, that the heart is not possessed of an active power of dilatation. It is, indeed, so manifest in the action of the hearts of living animals, as to admit of an easy and satisfactory demonstration. "The heart," says Bichat, "dilates of itself when it is empty, as we see by drawing it out of living animals, and afterwards emptying the fluid which it contains, because it has in itself the cause of dilation ;"* and the Abbe Spallanzani observed, that on throwing the heart of some frogs in warm water, notwithstanding there was no power to impel the fluid into the cavities, they were filled, and the water was, from time to time, ejected from the cut extremities of the vessels. In this case it is obvious, that the heart must have been dilated by a power inherent in itself, by which a vacuum being produced, the water rushed in ; but this fluid acting upon the irritability of the organ, its contractility was called forth, and the water was thrown out in a jet from the great vessels, which had been divided near the heart.

This power, with which the heart dilates itself, has been particularly noticed by Wilson Phillip and Mr. Carson,† who have attempted to build upon it an explanation of the motion of the blood in the veins. As we shall, however, have occasion in a future part of our inquiry to examine into the correctness of their conclusions, we shall pass them over, at present, without any further consideration.

M. Magendie has made a number of experiments in order to ascertain the force of the dilating power of the heart, and he affirms, that he has seen the ventricles dilate in animals recently dead, with a force which would raise twenty pounds. "If," says he, "we seize with the hand the heart of a living animal, however small its size, we shall find it im-

* Anatomie Generale, Tome 1st ; also, Anatomie Descriptive, Tome 2.

† See their different papers on the subject in the Periodicals of the day.

possible, whatever force we may exert, to prevent the dilation of the ventricles.”*

From a review of what has been said, we are forced to conclude, that the dyastole of the heart is owing to a kind of inherent power, which it possesses within itself, and is not the consequence of the current of blood overcoming its vis inertiae, as was the opinion of Harvey and his disciples.

Having now completed our consideration of the intimate structure and conformation of the heart, as well as the power by which it is put in motion, we shall, in the next place, proceed to an examination of the passage of the blood thro’ this organ.

The blood returned from every part of the body by the great veins, is poured into the right auricle, which, being excited by its appropriate stimulus, contracts, and forces the blood into the right ventricle, which is dilated to receive it. The ventricle in its turn, being filled and stimulated, acts, and propels the blood into the lungs, from whence, after being unloaded of its superabundance of carbon, by the function of the lungs, it is conveyed by the pulmonary veins to the left auricle, which, receiving it in a manner similar to that which took place in the right, empties it into the dilated ventricle, and this, being excited by the stimulating influence of the blood, and perhaps in part by the stimulus of distension, contracts, and drives the blood again throughout the whole system.

The succession of these phenomena do not occur precisely in the order in which they have been described, but we have a kind of double action taking place in the heart at the same instant. The action of the auricle is synchronous, as is also that of the ventricles. Hence, while the auricles are in dyastole, the ventricles are in systole; and, on the contrary, when the auricles are in systole, the ventricles, in their turn, are in dyastole.

From this circumstance we may consider the auricles as reservoirs, which are constantly receiving the blood, and at regular intervals discharging their contents into the ventricles, which, from their peculiar power and office, may be compared to forcing engines, which are destined to drive the blood into the most remote parts of the system.

It has been usual to estimate the amount of blood, thrown out at each contraction of the ventricle, at two ounces, and

* *Prices Elementaire de Physiologie, Tome 2.*

the whole mass at upwards of fifty pounds ; and it has been stated by respectable Physiologists, that this immense mass circulates with a velocity, by which it may move through one hundred and forty-nine feet in a minute, and this four thousand eight hundred times in an hour. This is the calculation of Haller and some others, without making allowance for the obstacles, which the blood has to overcome in its passage through the vessels,

But it is imposstble to form any correct conclusion from such uncertain data, and it would, perhaps, be as well to acknowledge our inability to arrive at any thing certain, in a case where we have to contend with so many difficulties, which are beyond our control.

That the force, however, is very great, which the heart exercises upon the blood, is manifest from the velocity with which it issues from one of the primitive arteries when divided. This power has been said by some Physiologists to be so great in frogs, as to rupture the aorta when it was obstructed by holding it in a pair of forceps, or on the application of a ligature *

Harvey observing the immense power which the heart exercised in the mechanism of the circulation, elevates it to a rank in the œconomy, to which it was not quite entitled. He considered it as the exclusive source of motion in the circulatory system, and would concede to the arteries and veins no other office, than that of mere elastic tubes, through which the blood was driven by the impulse of the heart.

This opinion, with some modification, is that which has received the sanction of a majority of the Physiologists since his time ; but, however simple, and beautiful it may appear, it is irreconcilable with many of the phenomena of the circulation.

In persons worn out by disease, or debilitated by any of the causes which have a tendency to enfeeble the vital energies, it is evident, that the heart must be so weakened in its powers, as to disqualify it for the fulfilment of so important a duty, and the circulation in the extreme vessels must of necessity, be suspended. Yet, we see in almost every condition of the animal œconomy, no matter how much the energies of the functions of life may be impaired, the blood still moves round the whole range of the circulation, in a manner adequate to the performance of those purposes, to which it

* Bell's Anatomy, vol. 1.

is subservient. Besides, in a number of the inferior animals, as the vermes,* &c. we find no heart, and the blood is moved through the arteries and veins by their own innate powers.

And if we direct our attention to post obit examinations, we shall often find the structure of the heart so changed by disease, as to preclude the possibility of its exercising but a very limited influence on the motion of the blood. Besides, the enlargement and thickening of its parietes, called hypertrophia; and besides aneurisim ulceration, cancer, &c. we have a great number of well authenticated cases, in which its structure was so changed by ossification, and ligamentous degeneration, as nearly to destroy its power altogether. Yet, in some of these, the patients experienced but slight inconvenience.

Columbus, Veslingeus, Haller, Bonetus, Alburtini, Morgagni,† Bordenave, Simmons, &c. have published cases, in which large portions of the heart were converted into a kind of tendinous, or ossific degeneration: Yet there was not that extensive derangement of the circulation, which we should expect to meet, from such an affection of the heart. The next remarkable affection of the kind which I have been able to find on record, is one described by Mr. Allan Burns.—“The whole extent of the pericardium covering the ventricles, and these themselves, with the exception of about a cubic inch at their apex, were completely ossified, and as hard as the skull.‡ The patient was principally affected, previous to her death, with cough, difficulty of breathing, nausea, constriction in the chest, and diffused pain over the abdomen. In Dr. Simmons’ case, the ossification extended from the base to the apex of the heart, and involved both auricles and ventricles.

From an impartial review of these facts, together with an attentive consideration of the phenomena of the circulation, it must, I think, appear manifest, that the heart is incompetent to the discharge of the whole of this important office, and that, although it contributes more than any other agent to the motion of the blood, yet some other power is requisite for the complete performance of the circulation. We shall now proceed, therefore, to enquire into and investigate the instruments of the circulatory system.

[To be concluded in our next.]

* Cuvier Lexons d’Anatomie Compar. Blumenbach’s Compact. Anat.

† Morgagni de Sed. et Caus. morb.

‡ Diseases of the Heart, by A. Burns.

ART. VII.

CASE OF RUPTURE OF THE FALLOPIAN TUBE :

BY

BENJAMIN SIMONS, M. D.

Charlotte, a coloured woman, the property of Mr. Winthrop, aged about twenty-five years, had been complaining for several days, but not so much as to prevent her attending to her duty. The morning of the day of her death, when she was sweeping a chamber, she suddenly felt debility, with cold sweats, and violent pain in the bowels. Some castor oil was immediately prescribed; it operated well, but without alleviation. In this situation my attendance was requested. The pulse was very feeble, with intermission; cold sweats, with chills; great sensibility about the abdominal parietes; and complained of excruciating pain when these parts were touched; the abdomen was swelled. As the oil had operated freely, and the evacuations natural, the cause of the complaint could not be attributed to any alvine obstruction. No symptoms of dysentery, or inflammation of the stomach and bowels. It could not be tympanitis, for this disease is usually the terminating mode of fever, or of dysentery. The patient had always been healthy, until a few days before her death. The castor oil was ordered to be repeated. In a few hours she expired.

The case being anomalous, an examination of the abdomen was proposed, and consented to.

On opening the abdomen, coagulated and fluid blood, the quantity of a gallon, and of venous colour was discharged. The abdominal viscera, were nicely sponged, to discover the place from whence the hæmorrhage had flowed. The hepatic vessels, the gastric, splenic mesenteric, renal; the trunk of the vena portæ, the cava, and aorta were all entire. The examination was next extended to the uterus and its appendages. A rupture an inch and half in length, of the left Fallopian tube was discovered. The ovum could not be found. The whole of the internal and external organs of generation were removed, and preserved in spirits.

The uterus was three times larger than in the unimpreg-

nated state, a longitudinal incision was made into its cavity to display the membra decidua.

In this case the Fallopian Tube between the place of rupture, and where it enters the uterus was nearly obliterated, so that the ovum could not pass into the uterus. This cause of extra uterine foetus has not been noticed by any of the writers on the morbid anatomy of the uterus to my knowledge, and it may be the most frequent cause.

ART. VIII.

CASE OF EPILEPSY, WITH APPEARANCES POST MORTEM :

BY

GEORGE LOGAN, M. D.

There is no condition of the human system, contemplated with stronger emotions of awe and sensibility, and none which claims a greater share of the consideration of the Pathologist, than that in which the natural and intellectual functions are suddenly or with the slightest premonitory symptoms suspended, impaired or destroyed. Among the formidable diseases producing this deplorable effect we class *Epilepsy*. The following interesting case I beg leave to communicate:—

A male slave, aged 48, by profession a gardener, tall and apparently of robust habit, had for seventeen years, (and it is presumed longer,) been affected with this disease; on being interrogated, he said that he was subject to fits in his own country, being an African by birth,

The *Paroxysms* were such as are usually noticed, they occurred in general periodically, after several fits in succession in the course of a day, terminating with stupor of short duration, he continued for three or four weeks in perfect health, he was submissive in disposition; and in temper free from irascibility.

He lived under the circumstances described until December 1814, when he experienced a violent *attack* of *Peripneumony*, from which he recovered with difficulty, it had however the effect of suspending his fits for more than twelve

months, when, after a habit of intemperance in the use of ardent spirits which he unhappily contracted, his disease returned with increased frequency and violence.

Every means, moral and physical, which could be devised in his case failed in relieving him, formerly blood letting, Evacuants, Epispastics, Setons, &c. were beneficial, but *now* proved unavailing.—Mercury and other mineral and metallic preparations were in the first instance serviceable, but at this period were ineffectual, his disease resisted every remedy. But, although no salutary effect was produced, his constitution did not seem to suffer materially, and during the intervals he cheerfully pursued his business until the beginning of January 1824, when during a fit he fell into the fire place, and was severely and dangerously burnt before assistance could be obtained.

This casualty had no effect upon his disease, and he had not entirely got the better of it, when early on the morning of the 6th inst, he was found by his fellow servants dead in his bed.

He had not complained, nor appeared at all indisposed the preceding night, but not a doubt existed of his having expired a few hours after bed time, and that violent convulsions had supervened, as his features were much distorted, and his body and limbs rigid and cold.

Upon examination, previous to interment, in the presence of several gentlemen, the following phænomena presented themselves.

On removing the Scalp and a portion of the bones of the cranium the Dura mater, exhibited a morbid appearance, the blood vessels being every where in a state of turgescence; upon carefully separating this membrane a prodigious effusion of blood followed, which was discovered to proceed from the *longitudinal sinus* near the centre of its course, a dilatation of its coat, or Varix, of a periform shape, half an inch in its greatest diameter, had here formed, which projected totally and obliquely downward upon the cortical portions, jagged towards its base, where it seemed to have recently burst. Congestion was universally observed upon the Pia mater, and the characteristic cineritious colour of the brain was changed to a brown hue, on further dissection the Ventricles were found to be filled with a serous fluid.

The bones forming the basis of the skull exhibited nothing preternatural. Upon inspecting the portion of bones removed

the groove or impression usually made by the longitudinal sinus was deficient, instead of which something like an elevation or ridge was noticed, there was no depression corresponding with the varix mentioned, but the pits on the Parietal bones near the coronal suture were uncommonly large and deep, the diploe obliterated and the bone had become diaphanous.

It is worthy of remark that notwithstanding this manifest disorder in the œconomy of the head, the subject never complained of pain, and during the intervals of his disease was in entire possession of his faculties.



ART. IX.

On the use of the Nondescript, or Cherokee Rose, as a Hedge:

BY

CHARLES E. ROWAND, ESQ.

Messrs. Editors,—Through the medium of your Medical and Agricultural Journal, I will take the liberty of making a communication that I flatter myself will be acceptable to yourselves, and the Agriculturists of the State. Without further comment, therefore, I will state to you that I have, with a great deal of care, reared an Evergreen Hedge of the beautiful Nondescript, or as it seems to have lately assumed the new name of Cherokee Rose, which I have for many years last past, substituted for a wooden fence, and has answered my most sanguine expectations. I have no other upon my plantation, except moveable pens for cattle, hogs, &c. which are made in the usual way. My crop has no other defence against the depredations of cattle, and I can assure you with truth, it resists the attacks of an hog, which is the most formidable animal a planter has to contend with. The mode I adopted to obtain so valuable a desideratum was, first of all to dig three deep and wide trenches, about fifteen or sixteen inches apart, upon the surface of the earth, having

no ditch or bank, into which I inserted obliquely, at the distance of five or six inches, cuttings about fourteen inches long, and eight inches deep; the dirt must be well brought up to the stems, and well trodden in with the feet; the thicker you plant the better. The month of February I have always chosen and always succeeded most in setting out the cuttings.

The Nondescript being a vine, delights in low, moist, rich land, and always thrives, provided due attention is paid to it the first year. It will hardly vegetate when planted upon a bank, or near a ditch, as it is thereby deprived of what it most delights in—moisture. I request to say it is a fault too prevalent among many planters, to neglect plants of this description, viewing them as not forming a part of their crop, and not entitled to their serious attention. But, Messrs. Editors, one moment's reflection will set at nought such false ideas, for the trouble and labour of making a wooden fence annually, is far greater than the rearing so valuable and ornamental a substitute, independent of its beauty, and the little attention paid to it after being reared. In three years, with proper attention an Hedge of the Nondescript can be obtained and will afterwards require no other attendance than a labourer, with a hook, or knife made for the purpose to clip it annually, to keep it in proper shape, which he can do in about a twentieth part of the time that he would take to split the rails, cast them and make the common worm fence, which will last but a few years.

I have taken the liberty, Messrs. Editors, of thus trespassing upon your time; if you think the communication worth insertion in your Journal, which I think admirably calculated to disseminate knowledge of the most useful kind, it will be a source of pleasure and delight to suppose I could at all be instrumental in furnishing one single item either for instruction or amusement.*

* We shall always be happy to hear from our much respected Correspondent. We wish the Planters generally would direct their attention to this Hedge. It admirably supersedes the use of rails, and must be invaluable to places but thinly wooded. It saves great labour, where wood is plenty, and adds greatly to the beauty and security of a plantation. We had the gratification of seeing Mr. ROWAND's Hedge, and with pleasure state it to equal, if not surpass, any which we have seen in Europe, for beauty, luxuriance or security.—*Editors.*

ART. X.

A Letter to the Agricultural Society of South-Carolina, on the Water Culture of Rice, by THOMAS PINCKNEY, Esq.

The subsequent interesting letter, by our venerable and distinguished fellow-citizen, General THOMAS PINCKNEY, has been some time published by the Agricultural Society; but we could not resist the gratification of having it inserted in our Journal, and we are confident it will be highly acceptable to our readers.—*Editors.*

CHARLESTON, 12th Dec. 1810.

DEAR SIR,—Having last year made an experiment, on a small scale, of cultivating Rice, in a manner which, I believe, has not heretofore been practised in the United States, and having this year repeated the experiment much more extensively, with such a degree of success, as, in my opinion, to warrant further trial, I am induced to request the favour of you to lay before the Society the following account of the method pursued, with its result.

I have taken pains, for a considerable time past, to obtain correct information concerning the production of this grain, in countries where, in consequence of its long establishment and extensive use, I was induced to believe that experience must have suggested the most advantageous mode of culture; and I observed in the course of this investigation, that the practice of those countries differed considerably from our own; particularly in the application of water: for I found that in them, Rice was generally sown and grew to maturity in land continually inundated to a greater or less depth; except during the short intervals necessary for the occasional shifting the water. I, therefore, determined to endeavour to ascertain what advantage that method might possess over the practice which generally prevails among us of keeping our Rice-fields dry for a considerable portion of the first half of its growth.

Various accidents, to which the state of agriculture in this country renders us peculiarly liable, prevented me from ob-

taining the result of my first experiments, with such accuracy as to enable me to lay them before the Society ; they were, however, sufficiently satisfactory to myself to induce me to persevere ; and, on Friday, the 5th day of May, 1809, I directed five bushels of Seed Rice to be sprouted, which was effected by putting it into a rice-tierce filled with water, which gradually leaked out after the Rice had been well soaked ; and on the Monday following, the grains being fully swollen, and some of it having protruded the germ, it was spread out, some slaked lime sifted over it, to facilitate the distribution, and was immediately sown in a little more than two acres of ground ;—this small field had been planted with Rice several preceding years, and had then been prepared, by the stubble having been hoed off and burned, and the soil turned and made fine by the hoe : part of it was sown in drills at the distance of about sixteen inches from centre to centre, and the remainder broad cast : the seed was not covered, but the water very gradually brought over it, covering the land six inches deep on the general level, but being ten inches deep on the lower parts of the fields, and scarcely two inches over the highest : directions were given to retain the water constantly, as nearly as could be, at that height, keeping it sweet and cool, by occasionally admitting fresh tide-water, and by turning through it a small drain from the high land. The Rice grew through the water, and in about a fortnight, the points of the leaves were seen floating on the surface. In those parts where the water had covered the land six or more inches, no weeds or grass appeared, except a few leaves of the wampee and some rushes. In the higher parts especially, near the edges, some water grasses appeared ; all these however, were effectually removed, being picked by hand out of the water, by the application of labour, equal to the work of three labourers for one day. This Rice, when ripe, was separately harvested, and yielded one hundred and fifteen bushels and one peck of clean heavy grain ; the drilled appeared better than the broad-cast, but no accurate account of their relative product was kept ; and, in fact, the whole experiment is deficient in accuracy, because the land being a small detached piece of very irregular shape, it was difficult to ascertain its precise contents. Its product, however, certainly exceeded the average of the whole plantation that year, and the comparative experiment was so far satisfactory, that this product also considerably exceeded the

crops of the two preceding years made from the same land, neither of which crops exceeded ninety bushels. It was also proved, satisfactorily, by this trial, that rice would germinate, grow through and tiller, or branch out, well in land constantly covered with from six to ten inches of water.

In the present year I have cultivated, in this mode, twenty-two acres at my upper plantation on Santee river, and forty-eight acres of my lower place. A field of twenty-two acres at the plantation of my mother-in-law, Mrs. Motte, has been subjected to the same process ; and my son-in-law, Mr. John Middleton, has cultivated, in the same way, a small field containing seven and a half acres, at the plantation whereon he resides. The whole of these are tide-lands, and as the method used in all of them was nearly similar, I will not trespass on the patience of the Society, by the details of more than one of them, and will select for that purpose the comparative experiment made at my upper place, because it was made on two fields so similar in quantity, quality of soil, previous treatment, and indeed, in every respect, that a fairer test of the merit of each mode, could scarcely be made in one year.

Each of these fields contains twenty-two acres of our usual plantation measure, (210 feet square to the acre) they are precisely of the same shape ; the soil in both is a light black mould, on a blue clay foundation ; the clay, however, lies too low to effect the quality of the upper stratum, which is too light, they both have been cultivated upwards of twenty years successively, in Rice, and are only divided from each other by a bank : the drains and ditches in both were clean, the remains of the last year's stubble were burnt off, and the ground prepared, by being once ploughed and harrowed, and assisted by the hoe in low places where the plough could not do good work ; the whole was then ploughed with what we call a trenching plough, into drills, being, on an average, nearly eighty in number on each quarter of an acre (105 feet square) and the seed having been put to soak in water the day before, (No. 1 being the field intended for the common culture) was sown at the rate of two bushels an acre, (heaped measure) on the 28th day of March : the seed was not covered but was suffered to lie in the open trench during the night after it was sown, that it might better adhere to the soil, and not be displaced on the introduction of the water, which was slowly brought over it the succeeding morning :—

ded more grain but for this neglect. The half acre, whereof the seed was not soaked, grew equally well through the water, was as early ripe, and to all appearance as good as the rest of the field.

One field of twelve and another of fourteen acres were sown at my lower plantation, on Santee river, on the 25th of April, and treated in the same manner; they were both harvested soon after the storm in September—the twelve acres yielded five hundred and ten bushels, and the fourteen acres six hundred and thirty-two bushels of rice, weighing forty-five pounds to the bushel.—A violent gust of wind passed through the plantation while this rice was growing through the water, being then six or seven inches long, and the agitation of the waves drew up a considerable quantity of the plants by the roots, from the fourteen acre field, this left the rice, as we then thought, too thin in that field. The twelve acre field was not so much effected by the storm, and stood very regular and thick, and it proved, at harvest, that it was too thick, for the ears were much smaller than those of the fourteen acre, and it yielded only at the rate of forty-two and an half bushels per acre, while the other gave at the rate of forty-five.

Another field of twenty-two and a quarter of an acre, very much broken by a large creek, was sown on the 10th of May and subjected to the same treatment. It yielded one thousand and twelve bushels, or nearly at the rate of forty-six bushels per acre, of rice weighing forty-seven pounds per bushel. The rice in this field also, stood too thick, and one rood which had been sowed *broad cast, injudiciously*, scarcely produced any grain. One hundred and forty-four days labour was applied between sowing and harvest to these three fields, containing, together, forty-eight acres and a quarter, being precisely three days labour of one hand bestowed on each acre.

The field of twenty-two acres, cultivated at Mrs. Motte's plantation, was so very much polluted with rushes, wampee, and the species of jointed conch grass, called here blanket grass, that the labour bestowed on it was very considerable, and the product bad, nor was this product so accurately separated from the rest of the crop as to enable me to state the amount. I was not present when it was harvested, but on walking over the field, and examining the stubble, I found many patches where the rice appeared to have been totally

destroyed by the weeds, but where that was not the case, the Rice appeared to have grown perfectly well, the ears of what I was shown as part of the crop was certainly fine, but the deficiencies were so great that I should not estimate the product at more than a barrel and a half, or thirty bushels, per acre. One observation was, however, afforded by this trial, which is, that the accumulation of green scum or water moss, was prevented by twice shifting the water completely, during the night, before the Rice had progressed beyond the point or needle state : and another hint of some importance may be collected from it, namely, not to attempt this mode of culture in fields so foul with water grasses.

The field of about seven acres, cultivated according to this plan, by Mr. John Middleton, was sown on the 18th of April and reaped on the 3d of September, and yielded thirty-five bushels per acre, weighing forty-five pounds per bushel ; the labour bestowed on it was equal to the labour of one hand for eleven days.—This field also, was not in good order, and the Rice evidently stood much too thick in it, except on the margins, which failed almost entirely, owing, I presume, to the same cause as mentioned in the first experiment.—It was remarkable that this field, which was sown on the 18th April, was reaped on the same day with another field, which had been sown on the 28th of March, making a difference of twenty-one days ; and this acceleration of maturity attended all the fields thus watered, though not in so great a degree :—I think, however, the trials I have made will authorize me to promise, that Rice, cultivated in this mode, will be fit for harvest at least ten days before that treated in the usual manner.

My object, in troubling the Society with the above tedious detail being to induce some of our members to give this method a fair trial ; I hope to be excused if I trespass a little longer on their patience, by explaining the reasons why I consider it worthy of their attention.

I think it is evident in the first place that to pursue this system, much less intelligence will be required in the cultivators, than the mode usually adopted ; and, when we consider the general want of information in the agents commonly employed, this must appear a considerable advantage. Every practical planter knows that to understand the proper periods when the water should be admitted ; to what depth the land should be flowed ; how long the water should be

this water continued over the land five days, when finding, on examination, that some of the grains began to sprout, the field was dried and continued so until the Rice was old enough to admit of being hoed, when that operation was well executed, and the land still kept dry, until the growth of the Rice and the appearance of some grass among it called for a second weeding, which was well executed by hoeing the intervals, and picking by hand, all the grass from the rows of the Rice ; it then received what is commonly called the long flowing, the water being thrown on the land, to the depth of six or eight inches on the general level, where it was retained sixteen days, only occasionally shifting a little of it to keep it pure. The water was then gradually withdrawn, and as soon as the land was sufficiently dry, a third hoeing was given, stirring the ground well and picking out all the grass and weeds from among the Rice : it was then kept dry until it had formed a joint, when the water was again introduced and continued, with occasional freshening, until it was let off to dry the field for harvest ; but during this flowing the grass and weeds which had come forward since the third hoeing, were pulled out by hand. It was begun to be cut down on the first day of September, and when thrashed and winnowed, yielded nine hundred and ninety bushels of Rough Rice, weighing forty-six pounds per bushel.

I have so minutely described the method used in this field, that the Society might be enabled to judge how far this part of the experiment was properly conducted.

The field, No. 2, intended for the *water culture*, was treated exactly in the same manner as No. 1, until after it was sown, except that the seed prepared for it, was longer soaked and approached nearer to germination ; and that one half acre was sown on the 2d, and the water introduced on the 3d of April, and was kept as nearly as could be flowed to the depth of six inches, on the general level, until the 21st of May ; the ground, however was so uneven, that I measured several plants of rice which had just appeared above the surface, and found that they had grown through 17 inches of water, while some high parts of the field were not covered 3 inches deep. On the 21st of May, the Rice now standing up firmly, the whole of the water was turned off and some hands sent in to pull out the weeds, and on the 22d the water was re-admitted and retained until the 30th of June, when it was again completely shifted ; immediately after

which the field was again flowed, until the 14th of July, when it was once more emptied and renewed the succeeding day; and in addition to these total changes the water was partially freshened as often as circumstances would admit. Immediately after the 14th of July, the Rice began to put out the ear, and was ready for the sickle on the 22d day of August, but on account of rainy weather, on that, and the two succeeding days, it was not begun to be cut until the 25th of that month.

Some wampee and rushes appeared early in this field, and the washing of the loose earth from the banks covered the seed in the adjoining rows so deep that the rice did not come through it, and some labour was bestowed in transplanting into those rows.

The quantity of labour expended on this field, between sowing and harvest, was as follows:

May 17th	Eight labourers picking out weeds, etc. half a day each,	} 4 days work.
21st.	22 labourers the whole day,	
	Nine transplanting on margin,	9
24th	One raking off green scum,	1
25th	One ditto ditto,	1
June 30th	Twenty-two hands picking rushes, wampee, etc.	} 22
Total days work,		59

The product of this field when thrashed and winnowed, was 1069 bushels of rough rice, weighing 46 pounds per bushel.

This field must have suffered some injury from my having left home about a week after it was sown, without having given sufficient directions concerning the shifting of the water, at an early period of its growth. I was absent near three weeks, and on my return found a considerable quantity of green scum among it, which gave it a very unpromising appearance; the rice was then in that state that it would have been thrown down if the water had been altogether withdrawn, it was, therefore, only freshened partially, and the water was not totally changed until the 21st of May; and as I am of opinion that pure water is as essential to keep rice in a flourishing condition, as pure air is to the health of animals, I have no doubt but that this field would have yiel-

ded more grain but for this neglect. The half acre, where-
of the seed was not soaked, grew equally well through the
water, was as early ripe, and to all appearance as good as
the rest of the field.

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through the water, being then six or seven inches long, and
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of the plants by the roots, from the fourteen acre field, this
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twelve acre field was not so much effected by the storm, and
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it was too thick, for the ears were much smaller than those
of the fourteen acre, and it yielded only at the rate of forty-
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much broken by a large creek, was sown on the 10th of May
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bushels per acre, of rice weighing forty-seven pounds per
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amount. I was not present when it was harvested, but on
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many patches where the rice appeared to have been totally

destroyed by the weeds, but where that was not the case, the Rice appeared to have grown perfectly well, the ears of what I was shown as part of the crop was certainly fine, but the deficiencies were so great that I should not estimate the product at more than a barrel and a half, or thirty bushels, per acre. One observation was, however, afforded by this trial, which is, that the accumulation of green scum or water moss, was prevented by twice shifting the water completely, during the night, before the Rice had progressed beyond the point or needle state : and another hint of some importance may be collected from it, namely, not to attempt this mode of culture in fields so foul with water grasses.

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I think it is evident in the first place that to pursue this system, much less intelligence will be required in the cultivators, than the mode usually adopted ; and, when we consider the general want of information in the agents commonly employed, this must appear a considerable advantage. Every practical planter knows that to understand the proper periods when the water should be admitted ; to what depth the land should be flowed ; how long the water should be

retained, and how often the irrigation should be repeated, requires experience, judgment and attention. In the method I recommend, the watering process is certainly more simple, nothing being required but to admit the water from the first to a certain height over the land, and to retain it steadily through the whole growth at that height, the only skill and attention necessary to this part of the business being to keep the water pure and sweet, by changing it partially, or altogether, as often as is necessary for that purpose, and as circumstances will permit.

Of the advantages this method possesses over the common mode as it respects the saving of labour, the comparative statement, exhibited above furnishes abundant proof; and when the disadvantages arising from want of experience are considered, little doubt can, I think, be entertained, but that a few years practice, would enable us to diminish even the small portion of labour, applied in these trials, and the application of the labour, so saved, to other useful purposes would certainly be peculiarly beneficial to the land holders of the lower country, where many persons possessing more land than they can cultivate, it must be of the utmost importance to them to have more than three fourths of their labourers relieved from their present occupations for one third of the year, and ready to be employed in bringing into cultivation valuable land now lying useless, or of more highly improving that now in use. Many planters also, who have not now the leisure to prepare materials for building and to erect dams sufficient to enable them to use water-mills, and other machinery for manufacturing their crops would no longer be prevented from enjoying that benefit. Such also as have good high land near their swamps, would be enabled to plant cotton or other valuable products in addition to their rice crops; and they whose high lands are of inferior quality might improve them by manures, which, in our lower country, are every where at hand; for the worst of what is called pine barren, abounds in weeds and plants which grow luxuriantly in the summer; and every part of vegetable as well as animal substances, may be converted into good manure. It is not therefore, the scarcity of that article, but the want of labour necessary to collect, prepare, and transport it, that occasions this great improvement to be so little used among us. Lime, which is known to act so beneficially as a manure on the texture of sandy soils, might,

during this season of leisure, be burnt from the shells, with which our sea-coast abounds, within the reach of most of our rice planters, and either applied to the melioration of the soil, or sold to considerable profit at market; and, where timber abounds, sawing for market would prove a beneficial resource. But in no respect would this system, if successfully pursued, afford such permanent advantage and satisfaction as in the improved health of the persons actively employed in the cultivation; for it must be evident that the exhalation from the water frequently shifted and kept in a state as pure as is here recommended, would be far less deleterious, than that arising from the mud of the swamps after the water is withdrawn. Any person who has passed near a rice-field within a few days after the water has been let off from it must be convinced of the truth of this observation. But a further improvement in the health of our labourers may reasonably be expected to result from the experience which, of late years, has amply proved, that our pine-barrens, removed but a small distance from the swamps, and especially where a barrier or screen of trees is kept between them, afford residences infinitely more healthful than the immediate vicinity of rice-fields. If then, we shall find our labourers no longer bound to reside near the rice-fields by the attention and work necessary to be performed in them, according to the present plan, is it unreasonable to hope, that we shall, by degrees, and as circumstances may admit, remove our settlements to convenient distances in the higher lands, where our people might be employed to advantage, and enjoy better health? A few persons, in this case, must necessarily be left to attend to the watering process; and when the rice approaches to maturity the water should be withdrawn a few days earlier than is now customary, which would not injure the crop, but would suffer the first and greatest exhalations to pass off before the attendance of the labourers would be necessary in the field.

Before I conclude I will mention one more advantage that may possibly attend this mode, without entering into any detail concerning it, which is, that this mode of culture seems calculated to admit with advantage the practice of transplanting rice, whereby we may be enabled to obtain two crops in one year, from a considerable portion of our land; this, I find, is a practice generally pursued in Egypt, in China, in Industan, in the Philippine Islands, and in Spain; and

I hope next year to have it in my power to offer to the society the result of an experiment I have begun, with the hope of ascertaining whether this practice may be beneficially adopted in the culture of our rice lands.

It may have the appearance of presumption in a person having so little experience in this mode of culture, and who, it is evident, from the above detail, committed several errors in his former trials, to offer instructions on the subject ; but, hoping that such of my friends as may be induced to try this mode may profit by my mistakes, I will venture to recommend to them to keep their land dry all the winter, and to plough and harrow, or turn and break the soil, with the hoe, as well and as often as circumstances will admit, and for this purpose the land should be enclosed with good banks and well drained ; by this the growth of the roots and seeds of aquatic plants, which alone are to be feared in this culture, will be much checked if not destroyed. Until further experiments shall have ascertained it to be unnecessary, I would advise that the seed should be steeped in water for, at least, twenty-four hours before sowing, and then sown as usual in drills, (that in case the experiment should so far fail as to render hoeing necessary, that operation might be performed) as in this mode of sowing nearly every grain sown germinates. I believe from one and an half to one and three quarters of a bushel of seed to the acre, will be found sufficient, giving the largest quantity to those parts of the field which are lowest. The seed should by no means be covered by earth, but the water admitted slowly in the morning of the day after sowing, and increased gradually to as great depth as the supply of water and situation of the banks will admit, whereby all the loose stubble and trash in the field will float and be driven by the prevailing wind to one side or corner of it ; this trash should be removed, and, immediately after, the water reduced to six inches over the general level of the field. In the afternoon of the fifth day after sowing, the water should be entirely withdrawn from the field and readmitted with the next tide, or early in the morning of the next day. In five or six days more this complete change of water should be repeated, taking care to effect it while the Rice is still in the needle state, and consequently not liable to be thrown down. After this the water must be kept on steadily until the Rice shall have grown through it and stands firmly ; observing only to freshen it oc-

casionally by drawing off one or two inches and raising it again with the next tide to its standard. As soon as the Rice stands up strongly, the water should be entirely changed, and that process repeated two or three time (or oftener if it be necessary to keep the water quite pure and fresh) before it is finally taken off to dry the field for harvest.

I remain, with the utmost respect, Dear Sir,

Your faithful and obedient servant,

THOMAS PINCKNEY.

JOHN CHAMPNEYS, Esq.

President of the Agricultural Society of South-Carolina.



ART. XI.

Letters to JOHN HUME, Esq. President of the Agricultural Society, on the application of Lime to Marsh Land, and an experiment on the culture of the Sweet Potatoe : by JOHN MIDDLETON. Esq.

CHARLESTON, 21st Feb. 1825.

SIR,—In some of my Marsh Rice-fields, there are spots of ground so impregnated with salt or alum, as not to produce any thing. The last spring I applied lime, at the rate of 100 bushels the acre, to some of the parts affected, and made at the rate of two and a half barrels to the acre ; the other part of the field yielded three barrels more.

The spots where no lime was used, yielding nothing as usual. The Rice would germinate and die. In some cases it would come up and then die, either during or after the point flow. In others, it would live in an unhealthy state, until the long flow. There are some spots that will not produce any thing.

I have limited one spot, and will communicate the result at a future period.

Your obedient servant,

JOHN MIDDLETON.

CHARLESTON, 21st Feb. 1825.

SIR,—In April last I planted eighteen alternate rows of Potatoes, with whole and cut seed.

The nine rows of whole seed produced fourteen bushels of large and three of small Potatoes. The cut produced eight bushels of large and four of small. Thus the product of the whole seed exceeded that of the cut by five bushels.

At the same time, by request of Mr. Allston, I planted the same number of contiguous rows, with seed sent by him from Mrs. Horry's plantation.

The whole seed yielded four bushels of large and two of small Potatoes; the cut two bushels of each—in favour of the whole seed, two bushels.

The eighteen rows planted with seed grown by myself, produced nineteen bushels more than those that were sown with the seed sent by Mr. Allston.

This experiment certainly proves the superiority of the whole over the cut, and the necessity of a selection of seed.

Your obedient servant,

J. MIDDLETON.

ANATOMY AND PHYSIOLOGY.

ANTOMMARCHI's *Plates*.—We perceive that the Royal Institute of France has received the highly eulogistic report of M. Dumeril respecting this work, which we have shewn in a former part of this number, to be a very shamefully plagiarised copy of the superb plates of Mascagni. The plates of the skeleton, we perceive, are announced, and these at least Antommarchi must get drawn, as he does not happen to possess those of Mascagni.—*Anderson's Quart. Journ. London.*

Comparative Anatomy.—In this fertile field we have so many labourers, chiefly foreign, and so many works and memoirs in illustration, that we could fill our whole number with nothing else. As the subject, however, is less popular in this country, because, though interesting, it is less directly useful than many others, we must be brief. Oken, of Copenhagen, has published in the 7th number of the *Isis*, a very learned paper on the Dentary System of Animals, and M. Geoffroi St. Hilaire, has taken up the same subject in the *Mammalia and Birds*, in a work, the first part of which is just published. M. Gandolfi, of Bologna, in the *Opuscol. Scientifici*, pursuing this monographically, has investigated the dentition of the *sus scrofa*, and has found that the dentition is double, as in the wild boar.—*Ib.*

Hairs in the Stomach of the Cuckoo.—M. Carus, in a paper in Oken's *Isis*, has proved that there exist hairs in the stomach of the cuckoo, attached to its internal membrane, and resisting digestion. This fact, together with their being constantly found there (M. Carus having found them in twenty stomachs which he examined), proves that they are not, as had been imagined, the hairs of caterpillars swallowed for food.—*Ib.*

MAGENDIE's *Experiment on the Olfactory Nerves, explained by Mr. C. BELL*.—The discoveries of the French physiologists are very much like those of astronomers, who sweep the sky for comets—all random and guess work. English physiology is less dashy at first, but it wears better. Magendie's paradox, for example, that the olfactory nerves are not the nerves of smelling (see our last number, p. 620) is clearly and philosophically accounted for by Mr. Charles Bell.*—*Ib.*

* We regret to observe so sweeping an anathema against the French Physiologists. The Editor of the Quarterly Journal must have forgotten that to the French we are materially indebted, not only for many discoveries, but for some of the best works on Physiology. We could wish to see a similar condemnation of the French Physiologists.

“ In the exercise,” says Mr. Bell, “ of the sense of smelling, parts are employed, which do not, at first, seem necessary. For the highest enjoyment or exercise of the sense of smelling, it is necessary that the stream of air inhaled thro’ the nostrils should change its direction, and be increased in force. In breathing through the nose, the air is carried directly backward. If the nostrils are expanded in anxious or hurried respiration, the passage is enlarged, and made more direct. But, perhaps, my reader is not aware that in each nostril there are two circular openings, the innermost something more than half an inch within the other. This interior circle expands, and becomes lower when the breath is forcibly drawn into the lungs ; but in the act of smelling, it is much diminished and elevated. The change in the form and relation of the exterior and internal nostril is performed by the action of the muscles on the cartilages ; and the effect of the change is to increase the force of the stream of air, and to direct it up towards the seat of the sense of smelling. In common breathing, some part of the effluvia afloat in the atmosphere reaches the seat of the sense ; but fully to exercise the sense, it is necessary to concentrate and direct the stream of air, as I have described.

“ It will now be comprehended how the destruction of the portio dura, or respiratory nerve of the face, affects the organ of smelling ; for if, by the injury of that nerve, the motion of the muscles of the nostrils be lost, the breath may be drawn into the lungs through the relaxed passage ; but it will not be drawn forcibly up towards the seat of the olfactory nerve, nor will the air brush over the surface on which the proper nerve of sense is expanded.

“ A man, being paralytic on one side of the face, by the loss of power in the portio dura, was made to smell ammonia : it did not affect the paralytic side, because it was forcibly inhaled into the cells of the nose only on the side where the nostril was moveable. On trying the experiment on a dog, in whom the portio dura of one side had been cut, the same thing was manifested ; he snuffed it up with the sound side, and showed the natural consequence of the irritation of the membrane ; while he was not similarly affected, when the bottle was put to the paralytic nostril.

scientific men of different nations. Science is confined to no particular spot, and scientific men of whatever nation, so far as science is concerned, should be looked upon as citizens of the world.—*Editors.*

“ Unless I had attended to the structure and function of the part, on witnessing these phenomena, I might have conceived that the seventh nerve was the nerve of smelling. like a noted French physiologist, who concluded, too hastily, that he had discovered the nerve of vision and of smelling in the fifth nerve. I allude to certain experiments lately performed in London by a distinguished visitor, [Magendie,] which afford a proof of the utter impossibility of reasoning correctly on these subjects without the knowledge of the anatomy. The olfactory nerve was destroyed, and ammonia put to the nostrils of the animal, and when the creature sneezed, it was a coup de theatre ! then the gentlemen congratulated themselves that it was discovered that the first pair of nerves was of no use !! The common irritability of the Schneiderian membrane results from the fifth nerve : why does the membrane possess this sensibility, and why is the sensibility joined to the actions of the respiratory system ? Because these passages must be guarded as the larynx is guarded. When any thing offensive is lodged there it must be removed, and the means Nature employs is to drive the air by an instinctive action of the respiratory organs, violently and suddenly, through the nostrils. But what has this to do with smelling ? As well might we destroy the olfactory nerve, and wonder that the creature experimented on still coughed when the larynx was tickled.

“ We have some observations on this subject, in Mr. Shaw’s paper already quoted. ‘ The effect upon the nostril is the most obvious symptom, when the nerve is cut in the ass. If, after having cut the right nerve, (portio dura,) we hold the nostril for a short time, so as to prevent the animal from breathing, he will, when freed, begin to snort, but with the left nostril only. If we hold carbonate of ammonia to the paralyzed nostril, he will be affected ; but if it be held to the other, he will snuff it up, and then curl the nostril, and have an expression in the whole of that side of the face, as if he were going to sneeze, while the right side will remain quite unmoved.’

“ The rationale of this is worth attention ; by the neglect of it, some physiologists and experimenters have appeared to much disadvantage. The act of smelling is not simply drawing breath ; but while the breath is drawn, there is a conformity in the motion of the nostril, by which the air, loaded with effluvia, is directed to the seat of the olfactory

nerve ; that is to say, is made to circulate in the higher parts of the cavities of the nose, instead of streaming directly backwards into the posterior nostrils. This was the reason why, on putting the ammonia to the nostril which was still, the creature was not excited, although there had been nothing done to injure the sensibility of that side of the nose. If a man were simply to draw his breath in taking snuff, the powder would be drawn into his fauces and lungs ; but to snuff, the point of the nose is drawn down, and the nostrils contracted, and then when the air is inhaled, the snuff rises to the superior cells, and stimulates all the interior of the nostril. Although by this stimulus he sneezes, the olfactory nerve has nothing to do with it. The luxury is in the stimulus of the respiratory system, through the excitement of the membrane, not in the odour as enjoyed by the olfactory nerve. The sensitive branches of the fifth are first excited, then the respiratory system is in a secondary manner affected ; and to ascertain whether the mode of communication between the fifth and the respiratory nerves be affected at their roots in the brain, or at their extremities, is a fair question to be determined by experiment or reasoning."

DR. WOLLASTON *on Single Vision with Two Eyes*.—"So long as our consideration of the functions of a pair of eyes is confined to the performance of healthy eyes in common vision, when we remark that only one impression is made upon the mind, though two images are formed at the same moment on corresponding parts of our two eyes, we may rest satisfied in ascribing the apparent unity of the impression to habitual sympathy of the parts without endeavouring to trace further the origin of that sympathy, or the reason why, in infancy, the eyes ever assume one certain direction of correspondence, in preference to squinting.

"But, when we regard sympathy as arising from structure, and dependant on connexion of nervous fibres, we therein see a distinct origin, of that habit, and have presented to us a manifest cause why infants first begin to give the corresponding direction to their eyes, and we clearly gain a step in the solution, if not a full explanation, of the long agitated question of single vision with two eyes."—*Philosophical Transactions*.

M. CHEVEREUX *on Cholesterine in the Bile*.—This chemist, from his having discovered the presence of cholesterine in the bile, is persuaded that we may hence be led to chemical re-

medies for biliary calculi, on the same principle that lithon-
triptics are prescribed for gravel and urinary calculi, since
the discovery of the uric acid.—*Magendie's Journal*.

On the causes of Animal Heat.—The following are some
of the conclusions obtained by M. Desprety, during the
course of his experimental investigation of the causes of ani-
mal heat :—

1st. Respiration is the principal cause of the develop-
ment of animal heat ; assimilation, the motion of the blood,
the friction of various parts, may produce the small remain-
ing portion.

2d. Besides the oxygen employed in the production of car-
bonic acid, another portion of this gas, which is sometimes
very considerable in proportion to the first, also disappears ;
it is supposed, generally, that it is employed in the combus-
tion of hydrogen of the blood. In general more oxygen dis-
appears in the respiration of young animals than in that of
adults.

3. Exhalation of nitrogen takes place in the respiration of
those mammiferous animals which are carnivorous or frugi-
vorous, and in the respiration of birds ; the quantity of nitro-
gen exhaled being greater in frugivorous than carnivorous
animals.—*Annal de Chim.* xxvi. 360.

Experiments on the Heart.—Mr. Wiltbank, of Philadel-
phia, has instituted some experiments on the snapping turtle,
(*Testudo Serpentaria*) to prove the action of the heart inde-
pendent of nervous influence ; one of which we copy.

Exper. 6th.—We took off part of the inferior shell of ano-
ther snapping turtle, and observed the motion of the heart
without opening the pericardium : its pulsations were ascer-
tained to be 26 in a minute. In a half of an hour, the princi-
pal vessels were tied, and the heart removed from the body.
The ventricle being gorged with blood, pulsated 96 times in
the minute ; while the auricles at the same time beat 48. The
ventricle was now separated from the auricles, when instant-
ly its pulsations were reduced to 12 in the minute. After
a few minutes the two separated portions pulsated for a time
alternately, and 19 in the minute. In one hour the animal
from which the heart was taken was set at liberty, and evinc-
ed clearly the power of locomotion, exercised volition,
showed anger, turned to defend itself, and snapped at any
thing held before it. It then crawled away several yards,
and hid itself in the grass. In an hour and a quarter, the

ventricle pulsated seventeen in a minute, but the auricles had entirely ceased to move. In an hour and three quarters the animal still moved, hissed and snapped, but appeared to be more feeble. When laid on its back, it could not now, as before, restore itself to its natural position. The motion of the ventricles had, in two hours, entirely ceased. In three hours the animal evacuated its fœces and moved along: in five hours it appeared quite dead.—*Philad. Journ. No. 18.*

Case of Menstruation from the Mammæ.—M. Buttner, a practitioner at Halbustadt, has published a case of this kind. It occurred in an hysterical woman who experienced the ordinary symptoms of menstruation, which subsided when five or six spoonful of sanguineous fluid had been evacuated from the nipples. This lasted about six days, when a white mucons discharge supervened.*—*Journ, der. Praktischen, Heilkunde.*

PATHOLOGY.

Sublingual Pustules in Hydrophobia.—The Prussian Minister has addressed a circular to the medical profession, recommending a careful search for the sublingual pustules, mentioned by M. Marochetti, in cases of hydrophobia. In consequence of this Dr. Baumbach, of Erfurt, in attending a woman who had been bit in the finger by a rabid cat, and was decidedly hydrophobic, found the pustules, cauterized them, and the patient recovered. Etmuller and Ideler had not the same success in treating an old man of sixty, near Mersebourg, who was bit by a rabid cat on the 23d March, 1823. He remained well till the 16th of May, when he was seized with a burning, eating pain, in the place which had been bitten, though it had been a long while cicatrized. He was also convulsed and hydrophobic. They found four sublingual pustules, which they cauterised as Marochetti directs, but the patient died the 19th May.—*Bulletin Univ. Oct. 1824.*

Atrophy of the Gall Bladder.—M. Nacquart detailed to the Academie Royale de Medecine, the case of an individual who formerly had a tumour formed by the Gall Bladder, in the right hypocondriac region, whence issued bile and biliary calculi. The person recovered, and the tumour disappeared, but some time afterwards he died, and on examination no trace of gall bladder could be found: the place where it is

* A similar case has come under the observation of a practitioner of this city. The particulars of which will be inserted in our next.—*Editors.*

usually situated was supplied by cellular tissue. A similar case was given by M. Ollivier.—*London Med. Repository*, March 1825.

M. Legallois presented, at the meeting of the Academy, the vena cava of a subject, with the right iliac vein and the saphœna of the same side, completely obliterated, and filled by a fibrinous, solid and organized deposit; having in some points all the appearance of muscular flesh. The individual from whom this piece of morbid structure was taken, died of ascites and leuco-phlegmasia of the lower extremities.—*lb.*

M. Moreau presented at the meeting of the "Académie Royale of Medecine" of Paris, on the 30th of Nov. a foetus of six months, without brain and with a bifid spine at its vertical portion. It was without any abdominal parietes and the viscera of this cavity was contained in the base or foetal extremity of the cord which was a transparent cord to them. The heart passed into this cavity through a congenital opening in the diaphragm.—*lb.*

M. Bacon, presented to the meeting of the academy of the 14th of December, the heart of a person who died suddenly of a rupture of this organ. The rupture was situated at its middle part, near the anterior aspect of the left ventricle. The margins of the laceration, which was about three lines in length, were somewhat thin, but without any appearance of ulceration. The muscular substance was not observably softened in this portion of the parietes of the ventricle.—*lb.*

PRACTICE OF MEDICINE AND SURGERY.

Case of a Tænia found in the Bladder.—The following case must be received with interest, as it appears to be the only one of the kind on record. It was communicated by Dr. Darbon, who is well known for his various attempts made at the Hotel-Dieu and la Maison de Charite, to expel the Tape-worm. Many Physicians before him had found round worms in the kidneys and bladder. Geron has published the case of a woman affected with ischuria, produced by worms in the kidneys, and who passed three by the urethra. Tulpins speaks of a long, round, and very red worm rejected with the urine. Ambrose Parey says, that Louis Durrat passed similar worms after a protracted disease. Panzani met with a priest of fifty years of age, who had felt a constant pain in that part of the bladder which corresponds with the centre of the os sacrum: the symptoms appeared to in-

dicating a stone in that viscus ; but two *ascaris lumbricoides* having been discharged with the urine, he was suddenly relieved. Ducerf cites the case of a person afflicted with a permanent pain in the lumbar region, whose urine was almost always red and with sediment, and who, at intervals, experienced a considerable hæmaturia, with excruciating pain in the kidneys and bladder : this patient became completely emaciated, notwithstanding all the care of Professor Halle, and after a discharge of blood by the urethra, a slight fever and violent pain in the kidneys and bladder, he rejected with the urine, a worm of the size of a quill, and afterwards fifty others of different shapes, but mostly of the intestinal lumbricoid form ; after the expulsion of which, he was entirely cured. Dr. Robe Moreau attended a lady subject to a dysuria, accompanied with pain in the lumbar region, shootings about the pubis, a continual inclination to make water, &c. who was immediately relieved in discharging from the bladder a lumbricoid, alive. Chopart, Dumeril, Stromajer, Moublet, Raisin, Chris. Olombel, &c. have published similar observations ; but the most singular one, is that of a worm forming the nucleus of a stone found in the bladder.—*Editors.*

“ Mr. A—, aged fifty, had been for some time tormented with an intolerable itching about the anus ; when he was suddenly attacked with violent cramps in the penis, accompanied with such excruciating pain, that he lost his senses for several hours. Having recovered, he felt a very great desire to make water ; but many minutes elapsed before he could emit a little urine, with several joints of the tape-worm ; after which, this excretion took place with facility. The pain subsided for seven or eight days, when the same symptoms returned with chillings, soreness of the limbs, retraction of the penis towards the pubis, and also the testicles, which were very painful. The scrotum became slate colour, and this was undoubtedly occasioned by a slimy perspiration, that tinged the linen blue.* The patient experienced a similar attack, which terminated by passing other fragments of the *Tænia*. Those fits generally took place every eight days and lasted from twelve to fourteen hours. During one of them, a piece of six inches in length came through the

* It is to be regretted that Dr. Darbon did not keep a piece of the linen to ascertain whether this blue colour was not owing to the hydrocyanal of iron, as has been found in urine of a blue colour, and in the pass of some cancerous ulcers.

urethra, and so much impeded the emission of the urine, that the patient was in a most alarming situation, Mr. A— had been one year in this condition, when he applied to Dr. Darbon, who after having ascertained the existence of the *Tænia*, first emptied the bladder in injecting warm water into it. He next introduced by the assistance of a hallow probe, his remedy for the tape-worm, and left the instrument in the urethra, that the excretion of the urine might take place without carrying along any of the worm. He renewed the injection of his mixture two days in succession ; and suffered the probe to remain five days more. The ninth day having withdrawn the instrument, the patient excreted with his urine, several yards of the *Tænia*, mostly disarticulated and much decayed : Mr. A— has since been delivered of all pain.”

Case of Wounded Stomach.—Dr. Lovell, Surgeon Gen. of U. S. Army, has recorded a case of a boy, who received the contents of a musket in his left side, which fractured several of his ribs, and blew off some, lacerated the left lobe of the lungs and diaphragm, and perforated the stomach. In six weeks the lacerated sides of the stomach united with the pleura costalis, and external wound, thus preventing effusion into the cavity of the abdomen. This wound resembled a natural anus, with a slight prolapsus, except in the deficiency of a sphincter. At the end of a year he got quite well, but this opening continued, through which fluid swallowed, passed, except when retained by placing a plug in the orifice and retaining it with a compress and bandage ; his appetite is good and his digestion perfect. “ On removing the dressings,” says Dr. L. “ I frequently find the stomach inverted to the size and about the shape of a half blown damask rose. Yet he complains of no pain, and it will return itself; or is easily reduced by gentle pressure. When he lies upon the opposite side, I can look directly into the cavity of the stomach, observe its motion, and almost see the process of digestion. I can pour in water with a funnel, or put in food with a spoon, and draw them out again with a syphon. I have frequently suspended flesh, raw and roasted, and other substances in the hole, to ascertain the length of time required to digest each, and at one time used a plug of raw beef instead of lint, to stop the orifice, and found that in less than five hours it was completely digested off as smooth and even as if it had been cut by a knife.

Dr. L. promises to make some experiments regarding digestion.—*Medical Recorder*, No. 29.

Stricture of Urethra.—Mr. Shaw, of London, in a paper on Stricture of the Urethra, has recommended, when the passage is so obliterated as to prevent the passage of a bougie or catheter, that the stricture should be cut through, a catheter introduced through which the urine must pass, and the wound allowed to granulate over the catheter. The Editor of the Philadelphia Journal, in a note to a long extract from Mr. Shaw, observes: "This operation was proposed and practised in many instances with full success, by Dr. H. G. Jamieson, of Baltimore, nearly a year anterior to this proposition of Mr. Shaw." We beg leave to say, that Dr. B. B. Simons, of this city, performed this operation between fifteen or sixteen years ago, with success, and has frequently performed it since; and we are authorized by that distinguished surgeon to say, that he saw Sir William Blizard perform it many times in the London Hospital, between twenty and thirty years since.—*Editors.*

Efficacy of Tartar Emetic Ointment.—Dr. Tonelli speaks highly of the efficacy of this remedy in fevers, pleurisies, chronic catarrhs, rheumatism, tubercular suppurations, acute asthmas, hydrothorax, &c. One drachm and a half of tartar emetic to the same quantity of lard, is rubbed together, and rubbed on the epigastrium, the anterior part of the thorax, and at the same time on the back, between the internal margin of the scapula and the vertebral column.*—*An-nati. Universali.*

Power of Belladonna in preventing Scarlatina.—It is asserted by German physicians of great respectability, that the use of Belladonna, will secure persons from taking scarlatina, a disease although mild among us, extremely aggravated and fatal in Europe. The plan proposed is to take a "portion only of a grain of the extract or powder every day; or a solution is employed of grs. iij. of the extract to the ounce, or three drops being given twice a day to a child un-

* I have used this remedy for two years in chronic affections, in place of blisters, and found last summer, an acute case, apparently a signal benefit from it. A child labouring under yellow fever, could contain nothing on the stomach, and was puking black vomit; at the same time enemata exhibited were as quickly rejected, without producing alvine evacuations. Under these circumstances I made the attendant rub tartar emetic ointment frequently on the whole abdomen, and spine. The irritability of stomach ceased, and free and copious alvine evacuations ensued and large crops of pustules appeared over the cutaneous surface. Other remedies suitable to the case were afterwards applied, and the child recovered.

T. Y. SIMONS, one of the Editors.

der twelve months and an additional drop for every additional year. Dr. Koreff asserts that after eight or nine days use of the medicine, no danger need be apprehended of receiving the disease, and the celebrated Soemmering has been witness of its efficacy.*—*Vide Rev. Medicale*, 1824.

Epilepsy.—Dr. Laurent, of Versailles, presented to the Royal Medical Academy of Paris, at their meeting in August last, a young epileptic girl, whose paroxysms are attended with an involuntary action backwards. As soon as the attack begins, the little patient walks irresistibly backwards, stretching her arms forward and does not stop until some obstacle makes her fall. May not the cerebellum be the principal seat of disease in this case, according to M. Magendie's experiments.—*Arch. Gen. de Med.* Sept. 1824.

Rupture of the Aorta, occasioned by the introduction of a bone in the œsophagus.—The subject of this remark was received in the Marine Hospital of Rochefort, with symptoms of pneumonia of the left lung, accompanied with an acute pain towards the spine. An antiphlogistic treatment was resorted to, which appeared to relieve the patient; but on the 10th day, after a fit of coughing and a copious vomiting of blood, he expired. The chest was opened and exhibited signs of pneumonia. Towards the middle of that cavity, the œsophagus presented an ulceration of nearly the size of a quarter of a dollar, which had occasioned a similar one on the aorta, and consequently its rupture two inches below its great curvature, where a pyramidal bone, of an inch in length, was found; it weighed 18 grains, and was very sharp at its superior extremity, which had penetrated in the aorta. It was afterwards discovered that the bone had been swallowed ten days before he resorted to medical aid. A similar case is recorded in the school of Montpellier.—*Ib.* October 1824.

Uterine Hæmorrhage.—At a meeting of the Royal Medical Academy, Mr. Ezrat read a memoir on the use of citric acid in uterine hæmorrhage after confinement. His method consists in introducing in the uterus, a lime stripped of the skin, and cut at one of its ends, which he squeezes and leaves in that organ. Contraction is instantaneously excited by

* If this be confirmed by more extensive experiments and prove not to be a hasty conclusion from a few isolated facts, it may eventuate in the discovery of preventives for other epidemics which devastate the human race. The misfortune, however, with our profession, is, that whenever we take up a theory, we are too apt to seek every evidence which may confirm and neglect whatever may refute.—*Editors.*

the irritation produced by the acid and the lime itself, which is immediately expelled when the hæmorrhages stops.—*Ib.* Jan. 1825.

CHEMICAL SCIENCE.

Temperature of the Sun, &c.—M. Dulong communicated a letter from M. Pouillet, in which that philosopher announced, that he was occupied with experiments relative to the measure of very elevated temperatures, such as those on the surface of incandescent bodies, or bodies in ignition, of flames, and particularly of the sun. The instrument used by M. Pouillet to obtain these results is founded on the properties of radiant heat, and principally on this datum; that a body, the bulb of a thermometer for instance, perfectly insulated in the midst of a sphere of ice, but so placed as to receive the rays of the sun through a circular aperture of such a form and position, that all the lines forming tangents to the sun and the ball may pass through it, will be heated precisely in the same manner as if it were supposed that a portion of the surface of the sun, or of a body heated to the same temperature exactly filled the aperture in the ice. M. Pouillet, among other results, states, that the temperature of the sun thus determined is 1400 degree (2552 degrees F.)—*Proceedings of the society of Pharmacy of Paris.*—*Jour. de Pharm.* 1824, 415.

Security of Steam Engines.—The Royal Academy of Paris, has been called upon by the government, to report on the means proper to be adopted for the prevention of accidents and injury from the explosion of steam engine boilers. The means proposed had the double object of preventing the rupture of the boilers, or in case of their destruction, preventing injury to neighbouring buildings. They directed that the boiler should be proved by the hydraulic press, with a force five times that which they would have to bear during the working of the engines: that a safety valve should be attached to the boiler and locked up, the valve being so loaded as to open at a pressure just above that by which the boilers have been tried: that the boiler should be surrounded by a wall of masonry one metre (39,371 inches) in thickness; an interval of a metre being left between the boiler and the wall, and again between the wall and the neighbouring buildings. Another precaution has been added by M. Dupin, and adopted by the Academy; namely, the introduction of a metallic

plug into the upper surface of the boilers formed of such an alloy as should melt at a temperature a few degrees above that at which the engine is intended to work.

In consequence of this application, it became necessary to form a table of the pressure and temperature of vapour. The academy appear very doubtful of estimations as yet published, but give the following table up to eight atmospheres, as nearly correct: above that they say it was impossible to go without further experiments.

Elasticity in atmospheres.	Height of mercury.		Temperature of Fah.	Pressure on a square inch.
1	29,92	in	212°,0	14,61 lbs. avoird.
1 1-2	44,88		234,0	21,92
2	59,84		251,6	29,23
2 1-2	74,80		264,2	36,44
3	89,66		275,0	43,84
3 1-2	94,73		285,3	51,15
4	119,69		293,4	58,46
4 1-2	134,65		302,0	65,76
5	149,61		309,2	73,07
5 1-2	164,57		316,5	80,37
6	179,53		322,7	87,69
6 1-2	194,49		328,5	94,99
7	209,45		334,4	102,30
9 1-2	224,41		339,3	109,60
8	239,37		343,4	116,92

It is advised, that no direction should be given for the composition of the fusible plugs or plates, but their preparation intrusted to some competent person who should be responsible for the accuracy of their fusing points. The fittest place for them, all things being considered, is the upper surface of the boiler. Their proper diameter and thickness have not yet been ascertained; they should be such as to bear the force of the vapour without risk of breaking; and when the plate is fused, to leave an aperture sufficient for the ready escape of the vapour — *Ann. de Chimie.* xxvii. 95.

Purification of Vinous Liquors, from Fruits.—M. Cadet de Vaux states, that the very different products obtained by distilling the fermented liquors of various kinds of mellow and sweet fruits, may be purified and rendered almost identical with each other, by re-distilling the product with milk. As an instance, he quotes the comparison of a liquor he obtained from plums, as compared with the *kirschwasser* or

cherry water of the best kind. The plums, when fermented, gave a wine, which being unfit for the market, was distilled; but the product obtained was weak, was precipitated white by water, and was very inferior in flavour and value. On adding milk to it, when put into the still a second time, the latter instantly curdled; and when the distillation was completed, the product was found to be so good and excellent in its flavour and other qualities as to deceive the best judges, who took it for real cherry water, as made directly from cherries.—*Bulletin des Sciences*.

Conversion of Oxalate and Formiate of Ammonia into Hydrocyanic Acid—Professor Dobereiner has proved, by experiment, the occurrence of a phenomenon, the possibility of which he had previously inferred. It is, the conversion of the oxalate of ammonia into cyanogen and water. If this salt be mixed with oxalate of manganese, and heated by a spirit lamp in a glass tube closed at one end, we obtain, besides carbonic oxide and carbonate of ammonia, water and cyanogen, but the cyanogen is speedily converted, by the action of the carbonate of ammonia and water, into hydrocyanic acid.

The formiate of ammonia decomposed in a glass retort, is also converted into hydrocyanic acid and water.—*Phil. Mag.* lxiv. 234.

Preservation of Fish during Carriage.—For ensuring the sweetness of fish conveyed by land carriage, it is proposed, that the belly of the fish should be opened, and the internal parts sprinkled with powdered charcoal.—*N. M. Mag.*

Pacilline.—M. Paretta gives this appellation to a white powdery substance, with a peculiar colour, and insoluble in cold water, obtained from sassaparilla; and which he considers, from therapeutical experiments, to be the active principle of that plant.—*Proc. of the Acad. Royale de Med.*

Erlanite, a New Mineral.—This mineral was observed by Breithaupt, in 1818, in different parts of the Saxon Erzgebirg. It forms a part of the oldest gneiss formation, and is always mixed with more or less mica. Between Grose-Pohle and Erla there exists a bed of it, at least 100 fathoms in thickness. It has been used for upwards of 200 years as a flux by the iron smelters, and until its examination by Breithaupt it had been uniformly mistaken for limestone.

Characters—Lustre, feeble shining to dull; streaks, shining with a fatty lustre; colour, light greenish grey; streak,

white massive : sometime compact, sometimes in small and fine granular distinct concretions ; fracture, in some specimens foliated, in others splintery and even ; structure distinctly crystalline, but as yet no regular cleavage obtained ; hardness between that of apatite and actionolite ; specific gravity from 3 to 3.1. Before the blow-pipe readily melts into a slightly coloured, transparent, compact bead. It resembles gehlenite more than any other mineral ; is distinguished from fel-spar by greater specific gravity, and from saussurite by inferior specific gravity and hardness. It is composed, according to Gmelin, of

Silica,	53,160	Oxide of Manganese	0,639
Alumina,	14,034	Volatile matter	0,606
Lime,	14,397	Loss	1,995
Soda,	2,611		
Magnesia,	5,420		100,000
Oxide of Iron,	7,138		

Ann. Phil, N. S. viii. 389.

DOMESTIC INTELLIGENCE.

Medical College of South-Carolina.—This Institution closed its session on the first Monday of April, when Medical Degrees were conferred on the following Gentlemen :

ELI GEDDINGS, Abbeville, South-Carolina, *on the Circulation of the Blood.*

J. P. GAVIN, Georgia, *Cholera Infantum.*

W. C. WEBB, Charleston, S. C. *Febris Remittens.*

CHARLES W. GRAYSON, Beaufort, S. C. *on the Bilious Remittent as it appeared in the town and vicinity of Beaufort.*

J. L. FELDER, Sumpter District, S. C. *Gun-Shot Wounds.*

And Honorary Diplomas on the following Gentlemen :

DR. MATHEW IRVINE, Charleston, S. C.

DR. JAMES DAVIS, Columbia, S. C.

DR. MILTON ANTHONY, Augusta, Georgia.

STEPHEN ELLIOTT, L. L. D. Professor of Botany and Natural History of the Medical College of South-Carolina.

Medicated Vapor Bath Dispensary.—An institution of this kind, upon the plan of Mr. Whitlaw, established by an Association and conducted by three Medical Gentlemen is now in operation. Least this should be considered as operating

upon mountebank principles, we are authorized to say that a fair and impartial trial will be given of its powers. For our part, we think it must be highly scerviceable as an auxiliary treatment in all chronic and cutaneous diseases.—*Ed.*

The following summary was drawn up and kindly presented us by CHARLES E. ROWAND, Esq. Secretary of the Agricultural Society.

SOUTH-CAROLINA AGRICULTURAL SOCIETY.

The Cattle Shew, under the patronage of the South-Carolina Agricultural Society, took place on Monday and Tuesday, the 21st and 22d of February last, at which time were exhibited some of the finest specimens of the Short Horned or North Devon breed that have appeared in the low country. The Society was much gratified with the zeal displayed by the owners bringing them up for exhibition in such high order, and have no hesitation in declaring they think them an acquisition to the state.

A very fine Sow, of the English breed, imported from Liverpool, about two years ago, with her two Pigs littered last summer, attracted much attention, from their extraordinary size and beautiful shape at so young an age. Several purchasers offered for them.

A Ram and Ewe, of the Tunisian and Bakewell breed, raised upon Wadmalaw, reflected much credit upon their owner; after having obtained the Premium, they were sold for a good price.

Several other Animals were brought on the ground, but none of them first rate; they were barely passable. It is but justice however to say, that their blood could be traced to some fine stock, and we hope from the encouragement held out by the Society, it may operate as a stimulus to Planters, to use their utmost endeavours to revive the Agriculture of the low country. The weather was fine, but was made disagreeable by an Easterly wind, which, with the attraction at the race ground, of the horses practising for the week, prevented many persons from attending.

The following is a list of the Premiums awarded by the Society, viz.—

“To Mr. J. D. LEGARE for his Bull Hamlet, of the English North Devon

breed, whose sire was from the Cattle presented to Messrs. Caton and Patterson, and his dam to Mr. Rufus King, by Mr. Coke, of Norfolk, he being the first Bull exhibited for improving the breed of Milch Cattle—*The Gold Medal*.

To Mr. J. DEWEES for the best Bull for raising working Oxen; his sire an English Bull imported by Captain McNeal, and his dam, the Cow which obtained the premium of the Society in the year 1824—*The Gold Medal*.

To Mr. RANDALL ROBINSON for the best Cow for improving the breed of Milch Cattle; she being of the improved short-horned breed, and was purchased of Mr. John Hare Powell, of Pennsylvania, from his celebrated stock of cattle—*The Gold Medal*.

To Colonel JOHN BRYAN for his Mare Medusa; being the best exhibited for improving the breed of Farming Horses—*The Gold Medal*.

To Mr. JAMES MCPHERSON for his full-blooded Sorrel Filly, by Pocotaligo—*The Gold Medal*.

To Mr. HUGH WILSON for his Ram of the mixt Tunisian and Bakewell breed, being the best Ram exhibited—*The Silver Medal*.

To Mr. HUGH WILSON for the best Ewe, being of the same breed—*The Silver Medal*.

To Mr. WM. WASHINGTON for the best Sow; being imported from England, and exhibited with two fine pigs as a specimen of her progeny—*The Silver Medal*.

To Dr. JOHN S. BELLINGER for the best crop of Flint Corn—*The Gold Medal*.

And it is with great satisfaction the Committee recommend that the Gold Medal, being the Premium offered for the Manager of two or more Plantations, who shall produce the most satisfactory testimonials of diligence, skill, good management and humanity, shall be awarded to Mr. JORDAN MYRICK, as they have never examined more ample testimonials of exemplary conduct, than those given by the respectable planters by whom he has been employed for twenty years, completely according with all the qualifications required by the resolution.

The Committee regret that they cannot award to Mr. E. B. HORT, the premium for a Machine, whereby the moteing of Cotton may be *completely* performed. The Cotton Whipping Gin which he exhibited, not being calculated to operate, so as to completely supersede the necessity of moteing; but as an ingenious auxiliary to facilitate that important and tedious operation, they recommend it to the attention of the Society."

There was only one candidate for the Premium for Corn, and that barely over the quantity prescribed. The cause of which is obvious. It cannot but be fresh in the painful recollection of every one, that the disastrous hurricane of the last year, blasted the prospects of the Planters, spreading desolation in every quarter.

Among the various communications was one from our faithful and valuable correspondent, Mr. Malory, U. States Consul, resident at Tangiers, accompanying a small parcel of very fine and large grained Rye, informing that a large box, containing many rare and choice seeds from Tangiers

and its neighbourhood, was now on its way to South-Carolina, for the use of the Society. Great advantages must, no doubt, result from such a correspondent, and of which the Society will certainly avail themselves.

Fourteen Tea Plants, of the Bohea and Green, in full vigor, were also displayed, imported by order of the Society; they were distributed among the members, who promised to take care of them. These plants can be viewed at any time, by any person wishing to see them, by calling at the houses of the respective members to whom they were entrusted.*

It must be a source of delight to those interested, to hear of the various communications that have been made. It presents the gratifying view of the increase of Agricultural intelligence, and the flattering prospect of future improvements.†

Before I conclude this little summary, permit me to recommend to breeders of horses, cattle, hogs, and animals of every description, and why not include the feathered tribe, the propriety of bringing them annually to the Cattle Show, where an opportunity is offered to sell to advantage, the produce of their farm, of whatsoever nature it may be, thereby not only affording a reward for their labors, but a great increase to their income, and an additional proof of what can be done in our own state, if we only determine to act.

I regret to say that Agriculture is at a low ebb, but an annual exhibition of every thing in the Agricultural line, is one of the many ways to restore it. We possess the means, and it is our own fault if we do not use them. Whatever aid the Agricultural Society can afford, I feel confident in asserting, will be granted. Let all therefore unite, and endeavour to promote the much wished for object—the improvement of Agriculture; bearing always in mind, as a stimulus to exertion, the fundamental principles which influenced our Society in the distribution of their Premiums. *Qui meruit Palam, ille ferat.*‡

* Mr. Noisette has the Tea Plant in his hot-house, which he has reared from the seed.—*Editors.*

† See Dr. Johnson's and Mr. Middleton's Letters in this number.—*Editors.*

‡ We heartily concur with our respected correspondent in his remarks. From the spirit and energy which now is exercised among our Agricultural Societies, their increase throughout our state, and the respectability of the members composing them we look forward with sanguine expectations to the rapid advancement of every department of Agriculture, and we here again respectfully beg leave to say, that our Journal is open for the insertion of any useful communications which may be made to either of the Agricultural Societies, or which may be sent us by any individual.—*Editors.*